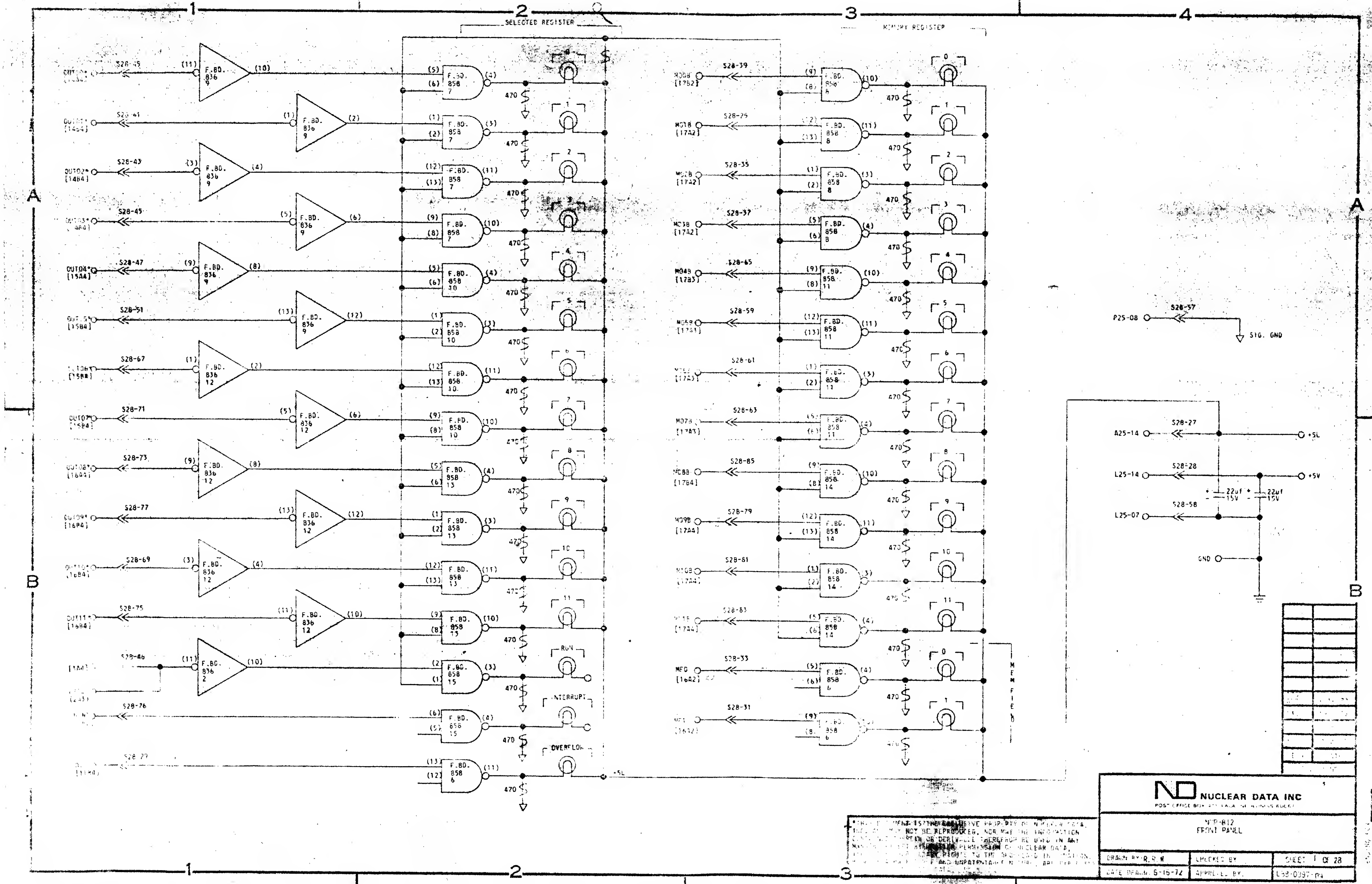
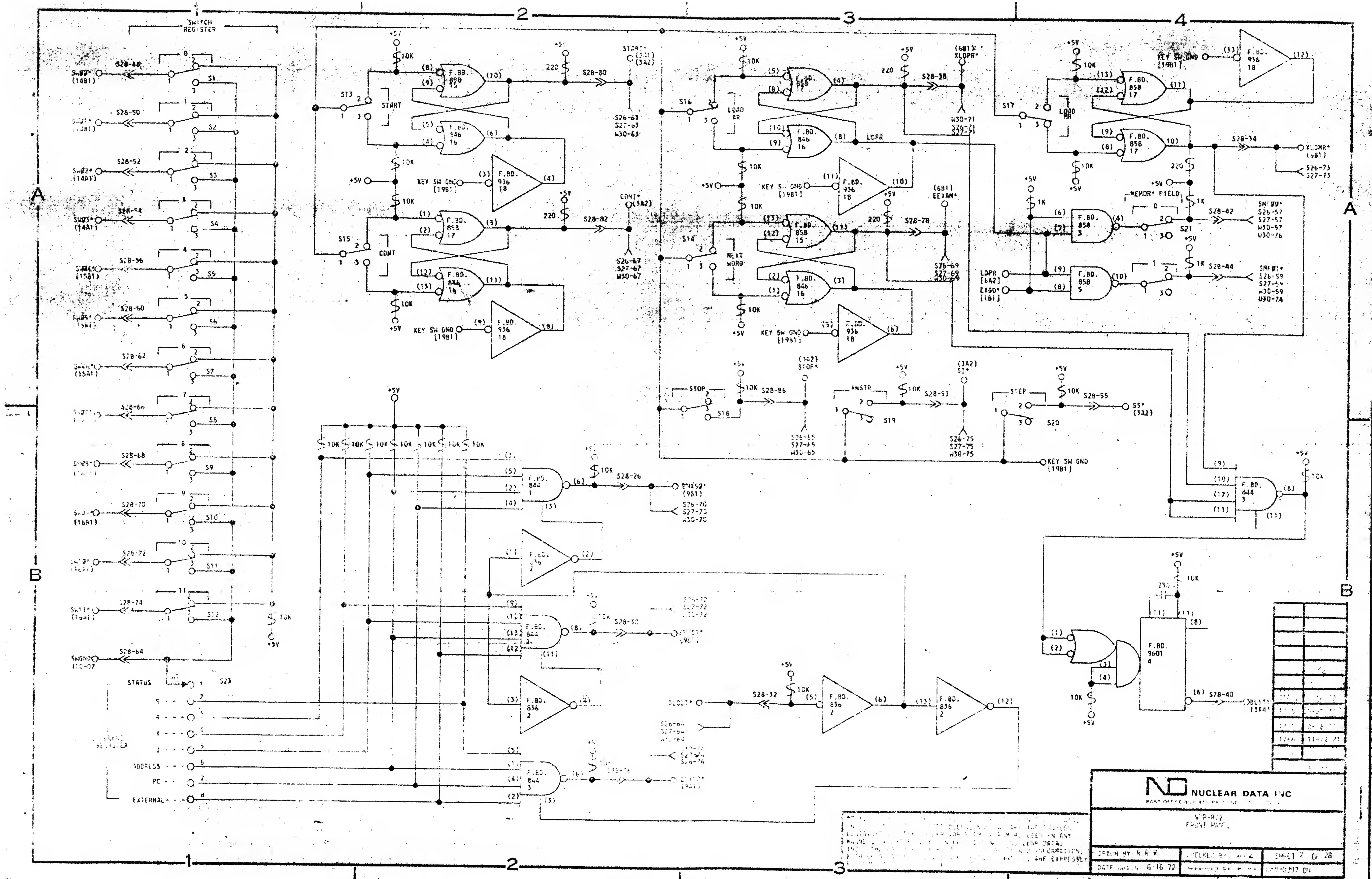
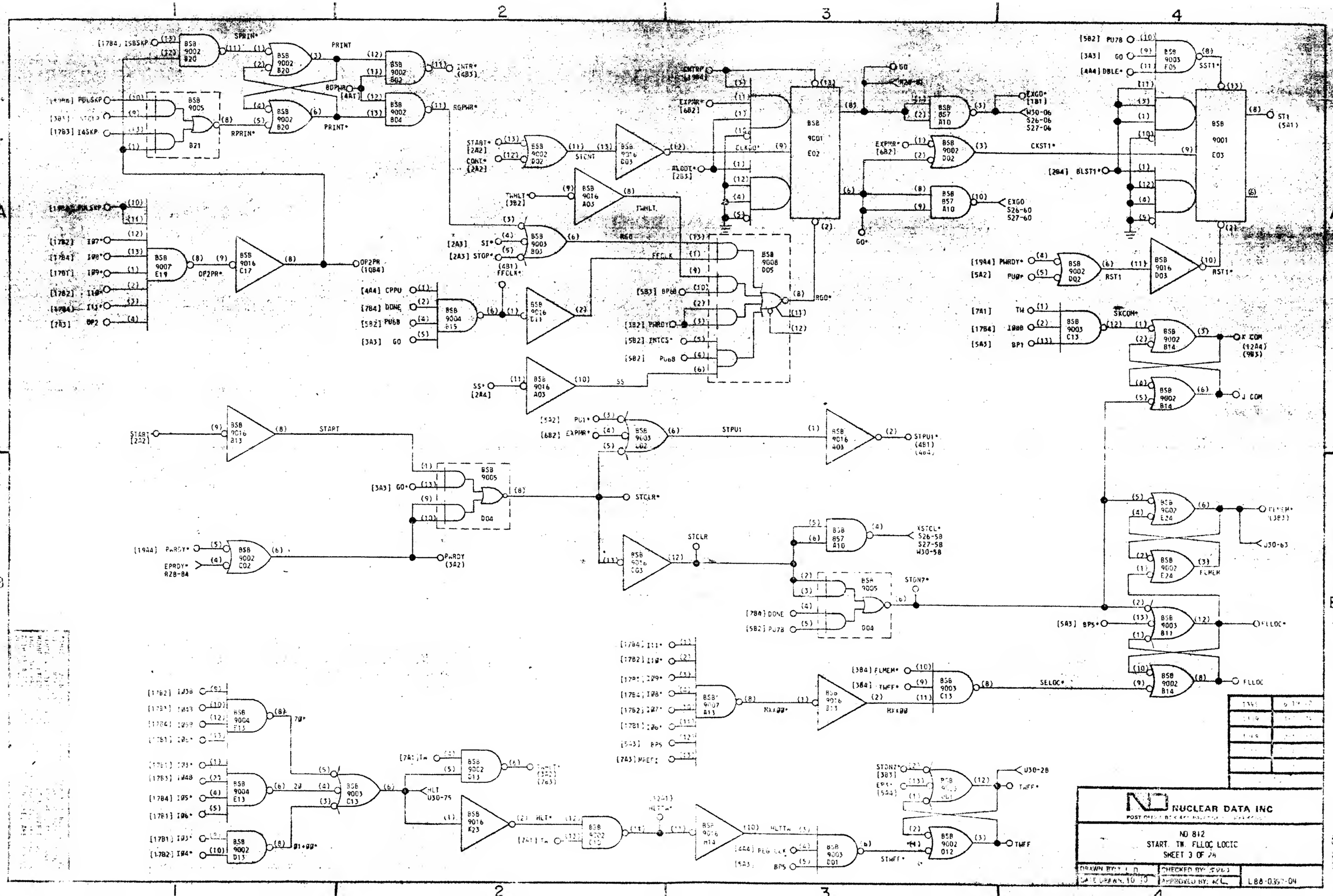
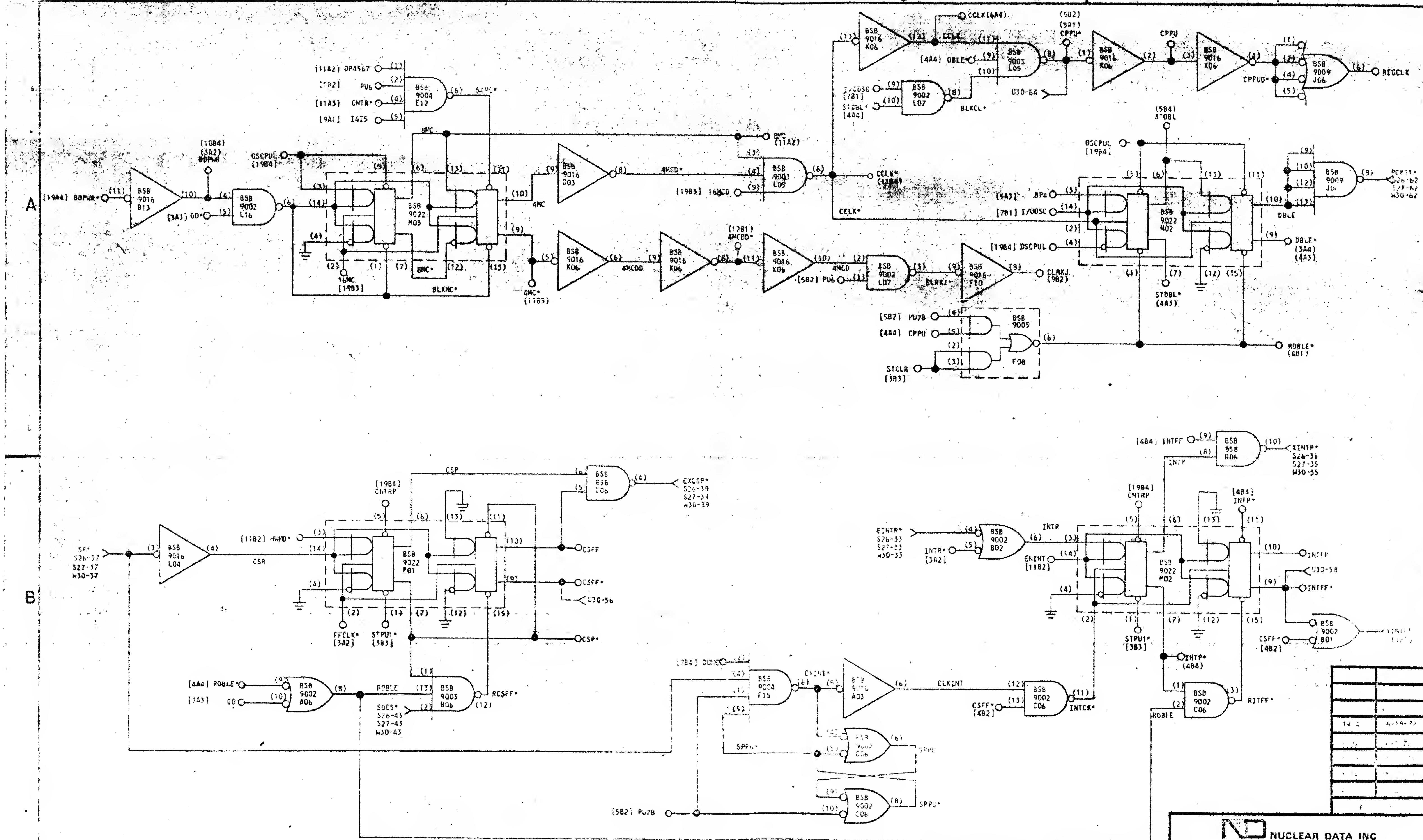

SELECTED REGISTER
MEMORY REGISTER
F.BD. 836
F.BD. 858
470
0
1
2
3
4
5
6
7
8
9
10
11
RUN
INTERRUPT
OVERFLOW
S28-39
S28-29
S28-35
S28-37
S28-65
S28-59
S28-61
S28-63
S28-85
S28-79
S28-81
S28-83
S28-33
S28-31
S28-43
S28-45
S28-47
S28-51
S28-67
S28-71
S28-73
S28-77
S28-69
S28-75
S28-46
S28-76
OUT02* [14B4]
OUT04* [15A4]
OUT07 [15B4]
MO0B [17B2]
MO1B [17A2]
MO2B [17A2]
MO3B [17A2]
MO4B [17B3]
MO8B [17B4]
MO9B [17A4]
MFO [16A2]
P25-08
S28-57
SIG. GND
A25-14
S28-27
+5L
L25-14
S28-28
+5V
22uf 15V
L25-07
S28-58
GND
MEM FIELD
NUCLEAR DATA INC
MCP-812
FRONT PANEL
DRAWN BY R.R.W
CHECKED BY
SHEET 1 OF 28
DATE DRAWN 5-15-72
APPROVED BY
L58-0397-P4


SWITCH REGISTER
START
CONT
LOAD AR
NEXT WORD
LOAD MR
MEMORY FIELD
STOP
INSTR
STEP
KEY SW GND
STATUS
NUCLEAR DATA INC
NDP-812
FRONT PANEL
DRAWN BY: R.R.W.
DATE DRAWN 6-16-72
SHEET 2 OF 28


[1784, ISBSKP
SPRIN*
PRINT
BSB 9002 B20
BSB 9002 B02
INTR* (4B3)
BDPHR [4A1]
[1783] PDLSKP
[581]
[17B3] I4SKP
BSB 9005
B21
RPRIN*
BSB 9002 B04
RGPHR*
[1782] I07*
[1784] I08*
[1781] I09*
[1782] I10*
[1784] I11*
[1783] BP2
BSB 9007 E19
BSB 9016 C17
OP2PR* (1084)
[4A4] CPPU
[784] DONE
[582] PU6B
[3A3] GO
BSB 9304 B15
BSB 9016 D11
[2A3] SI*
[2A3] STOP*
BSB 9003 B03
(4B1) FFCLK*
START* [2A2]
CONT* [2A2]
BSB 9002 B02
SICNT
BSB 9016 B03
TWHLT [3B2]
BSB 9016 A03
TWHLT
RGO
FFCLK
BSB 9008 D05
[583] BP6B
[3B2] PARDY
[582] INTCS*
[582] PU6B
RGO*
SS* [2A4]
BSB 9016 A03
SS
ENTRP* [1984]
EXPHR* [6B2]
BSB 9001 E02
CLKGO*
BLGDT* [2B3]
GO
RGO*
[582] PU7B
[3A3] GO
[4A4] DBLE*
BSB 9003 E05
SST1*
BSB 9001 E03
ST1 (5A1)
EXPHR* [6B2]
BSB 9002 D02
CKST1*
[2B4] BLST1*
BSB B57 A10
EXGO* [1B1]
W30-06
S26-06
S27-06
EXGO
S26-60
S27-60
[1944] PWRDY*
[5A2] PUP*
BSB 9002 D02
RST1
BSB 9016 D03
RST1*
[7A1] TW
[17B4] I08B
[5A3] BP1
BSB 9003 C13
SKCOM*
BSB 9002 B14
X COM (12A4) (9B3)
Y COM
START [2A2]
BSB 9016 B13
START
[3A3] GO*
BSB 9005 D04
STCLR*
[1944] PWRDY*
EPRDY* R28-B4
BSB 9002 C02
PWRDY (3A2)
[5A2] PU1*
[6B2] EXPHR*
BSB 9003 A02
STPU1
BSB 9016 A03
STPU1* (4B1) (4B4)
BSB 9016 C03
STCLR
BSB B57 A10
XSTCL* S26-5B S27-5B W30-5B
BSB 9005 D04
STON7*
[784] DONE
[5B2] PU7B
BSB 9002 E24
FLMEM*
U30-6B
BSB 9002 E24
FLMEM
[5A3] BP5*
BSB 9003 B11
FLLOC*
BSB 9002 B14
FLLOC
[1782] I03B
[1783] I04B
[1784] I05*
[1781] I06*
[1781] I03*
[1782] I04*
BSB 9004 E13
BSB 9002 D13
7B*
B1+GB*
[7A1] TW
BSB 9002 D13
BSB 9003 C13
HLT U30-7B
BSB 9016 K23
HLT*
[7A1] TW
BSB 9002 C12
(12A1) HLTTW*
BSB 9016 M14
HLTTW
[444] REG CLK
[5A3] BP5
BSB 9003 D01
STWFF*
[1784] I11*
[1782] I10*
[1781] I09*
[1784] I08*
[1782] I07*
[1781] I06*
[543] BP5
[7A3] MREF1
BSB 9007 B13
MXA0B*
BSB 9016 B13
[384] FLMEM*
[384] TWFF*
BSB 9003 C13
SELOC*
[5A3] STONZ*
EPS* [5A4]
BSB 9002 B12
U30-2B
TWFF*
BSB 9002 D12
TWFF
NUCLEAR DATA INC
NO 812
START, TW, FLLOC LOGIC
SHEET 3 OF 28
DRAWN BY:
DATE DRAWN: 10/15
CHECKED BY: EVEN
APPROVED BY: KCL
L88-0357-04



NUCLEAR DATA INC

POST OFFICE BOX 451 PALATINE ILLINOIS 60067

ND 812

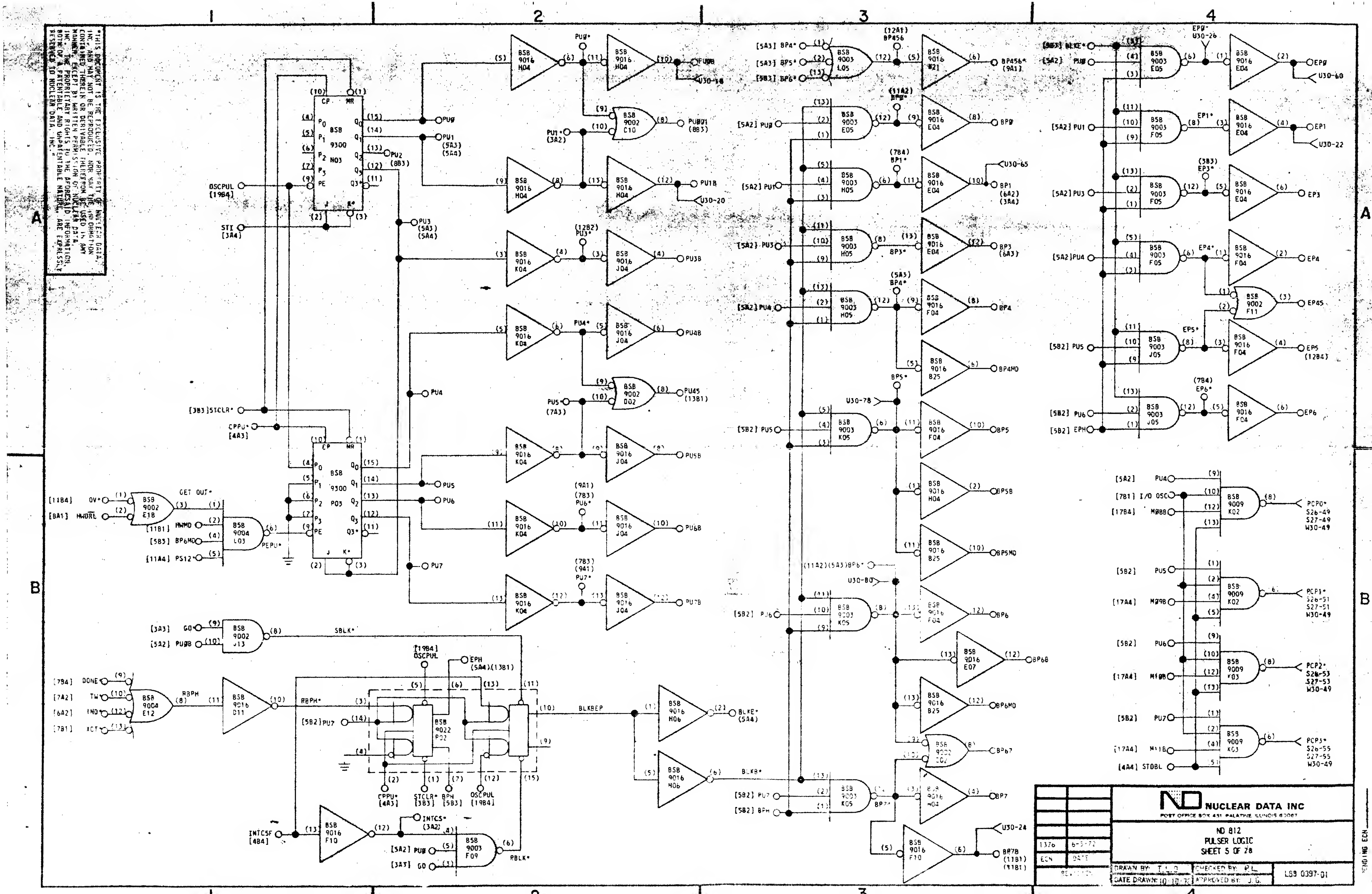
REG CLK. INT. DMA LOGIC

SHEET 4 OF

DRAWN BY: T. L. O. | CHECKED BY:

DATE DRAWN: | APPROVED BY: J. B

L68 0107-04



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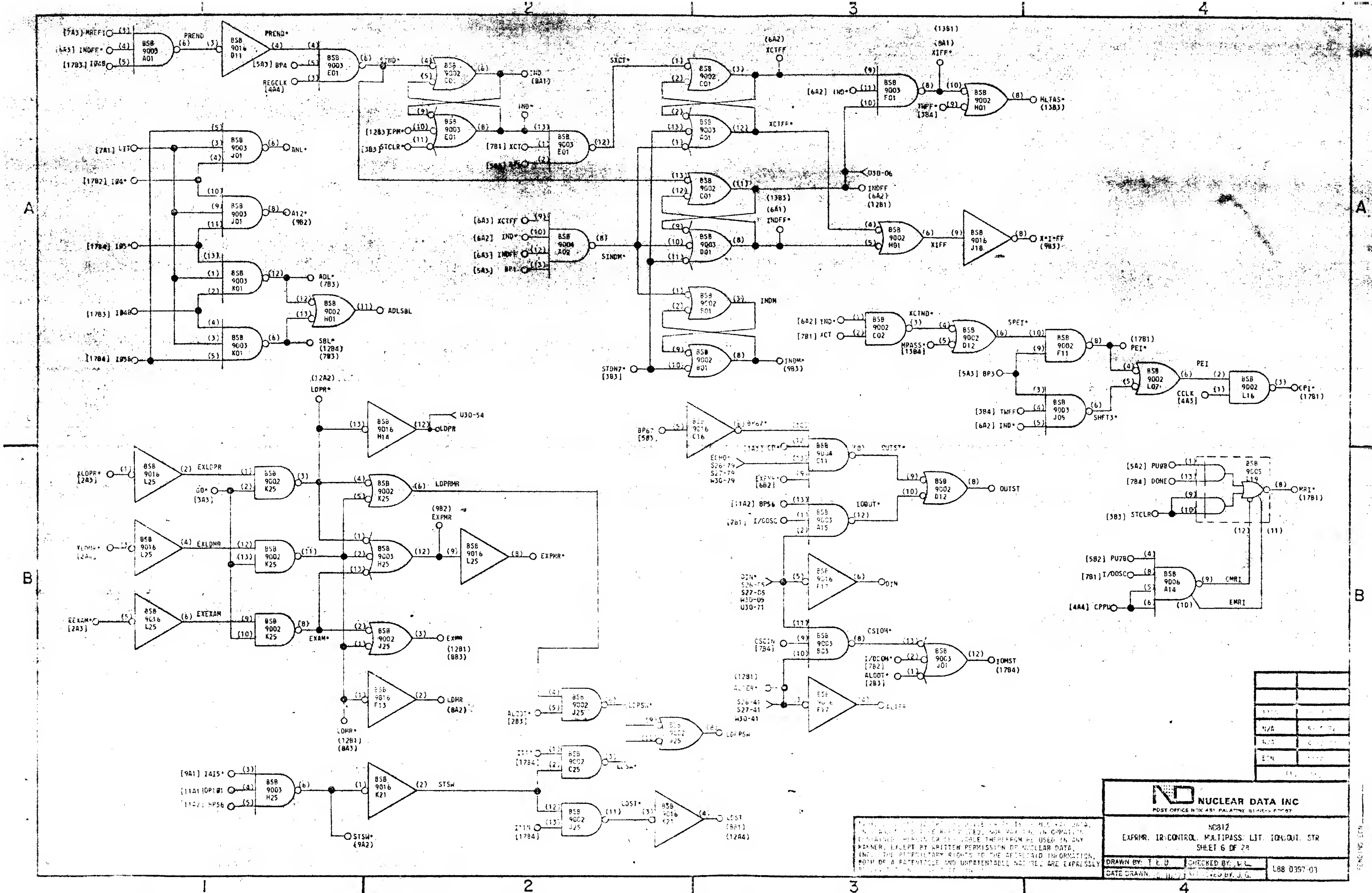
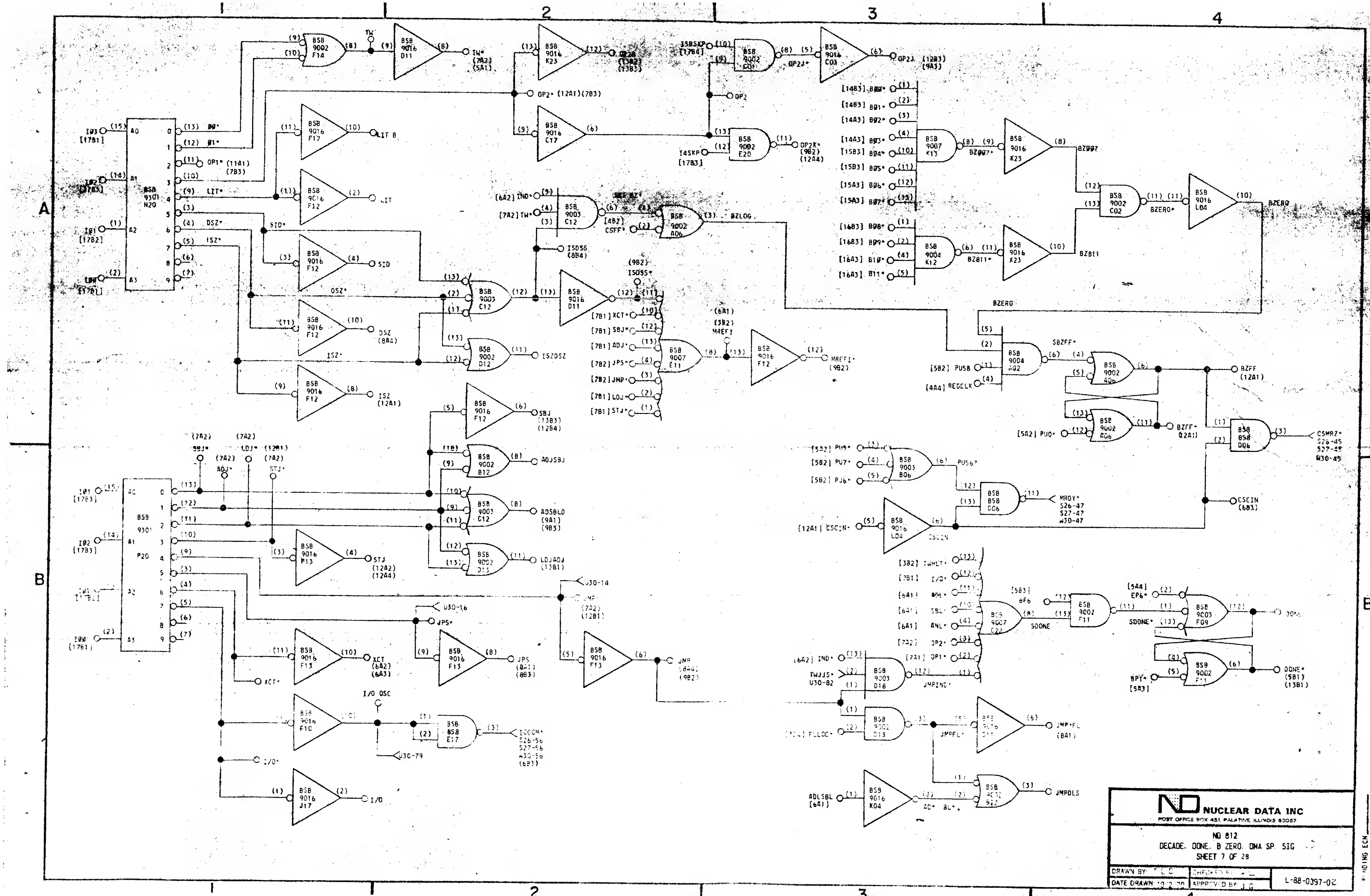
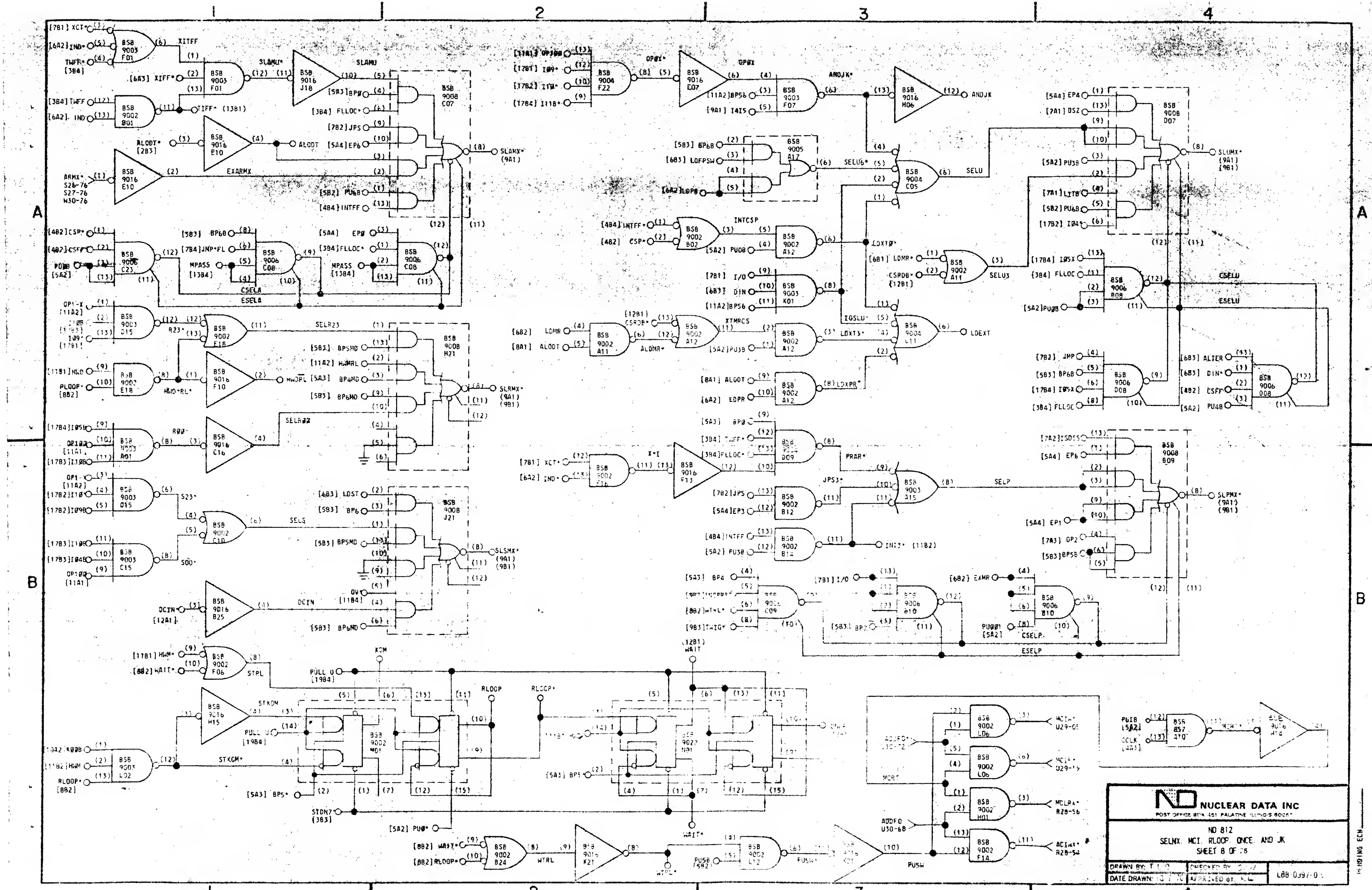
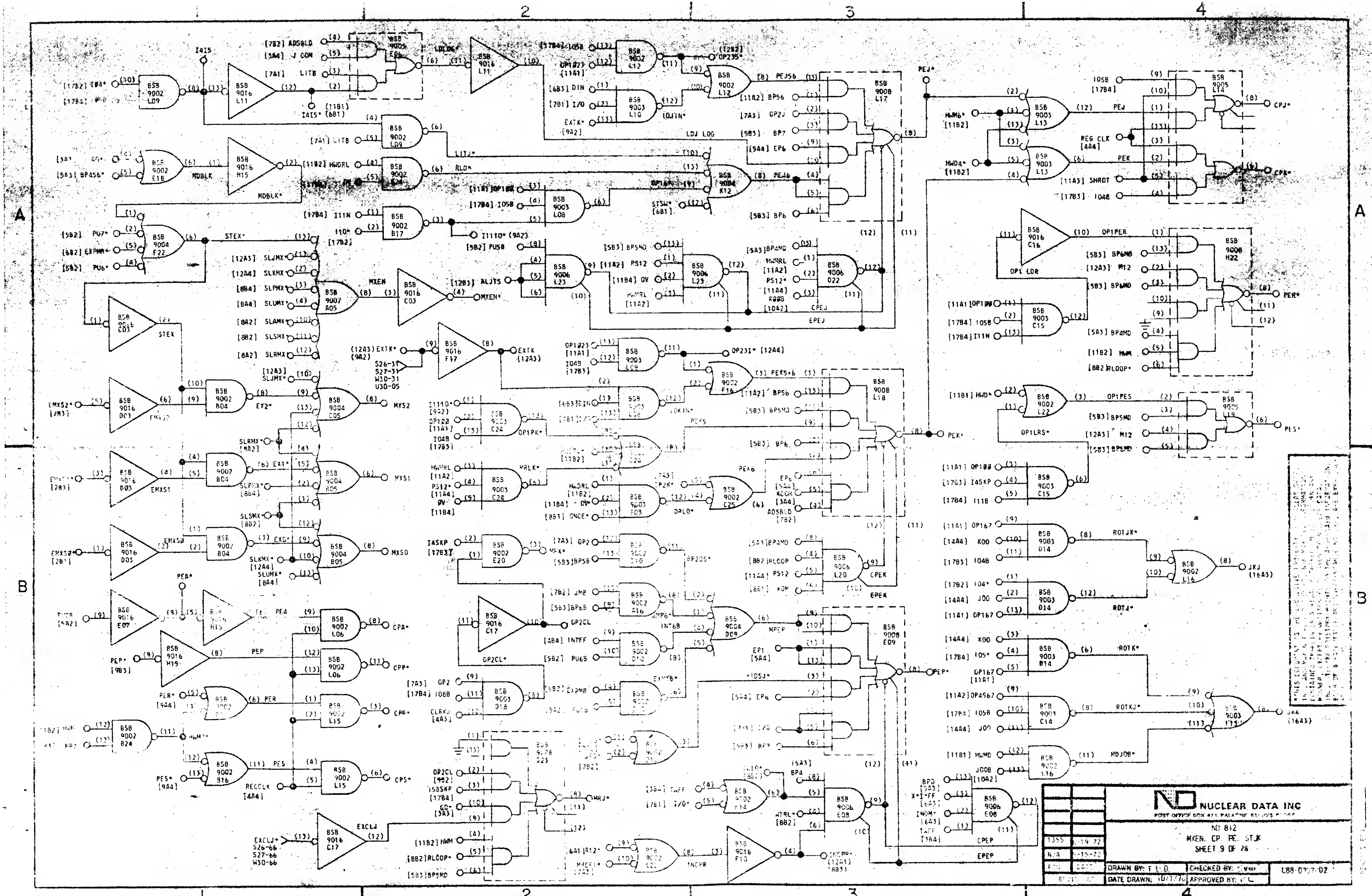
1
2
3
4
A
B
OSCPUL [19B4]
STI [3A4]
[3B3] STCLR*
CPPU* [4A3]
[11B4] OV*
[8A1] HWDRL
GET OUT*
HWMD
[5B3] BP6MD
[11A4] PS12*
PEPU*
[3A3] GO
[5A2] PUØB
SBLK*
[7B4] DONE
[7A2] TW
[6A2] IND
[7B1] XCT
RBPH
RBPH*
[5B2] PU7
BLKBEP
BLKE* (5A4)
BLKB*
INTCSF [4B4]
INTCS* (3A2)
[5A2] PUØ
[3A3] GO
RBLK*
EPH (5A4)(13B1)
CPPU* [4A3]
STCLR* [3B3]
BPH [5B3]
OSCPUL [19B4]
PUØ
PU1 (5A3) (5A4)
PU2 (8B3)
PU3 (5A3) (5A4)
PU4
PU5
PU6
PU7
PUØB
U30-18
PUØ01 (8B3)
PU1B
U30-20
PU3B
PU4B
PU45 (13B1)
PU5B
PU6B
PU7B
BP456* (9A1)
BPØ
BP1 (6A2) (3A4)
U30-65
BP3 (6A3)
BP4
BP4MD
BP5
BP5B
BP5MD
BP6
BP6B
BP6MD
BP67
BP7
BP7B (11B1) (13B1)
U30-24
U30-78
U30-80
EPØ
U30-60
EP1
U30-22
EP3
EP4
EP45
EP5 (12B4)
EP6
[5B2] EPH
PCPØ* S26-49 S27-49 W30-49
PCP1* S26-51 S27-51 W30-49
PCP2* S26-53 S27-53 W30-49
PCP3* S26-55 S27-55 W30-49
[7B1] I/O OSC
[4A4] STOBL
NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE, ILLINOIS 60067
ND 812
PULSER LOGIC
SHEET 5 OF 28
DRAWN BY: T.L.O.
CHECKED BY: P.L.
APPROVED BY: J.G.
LSB 0397-01

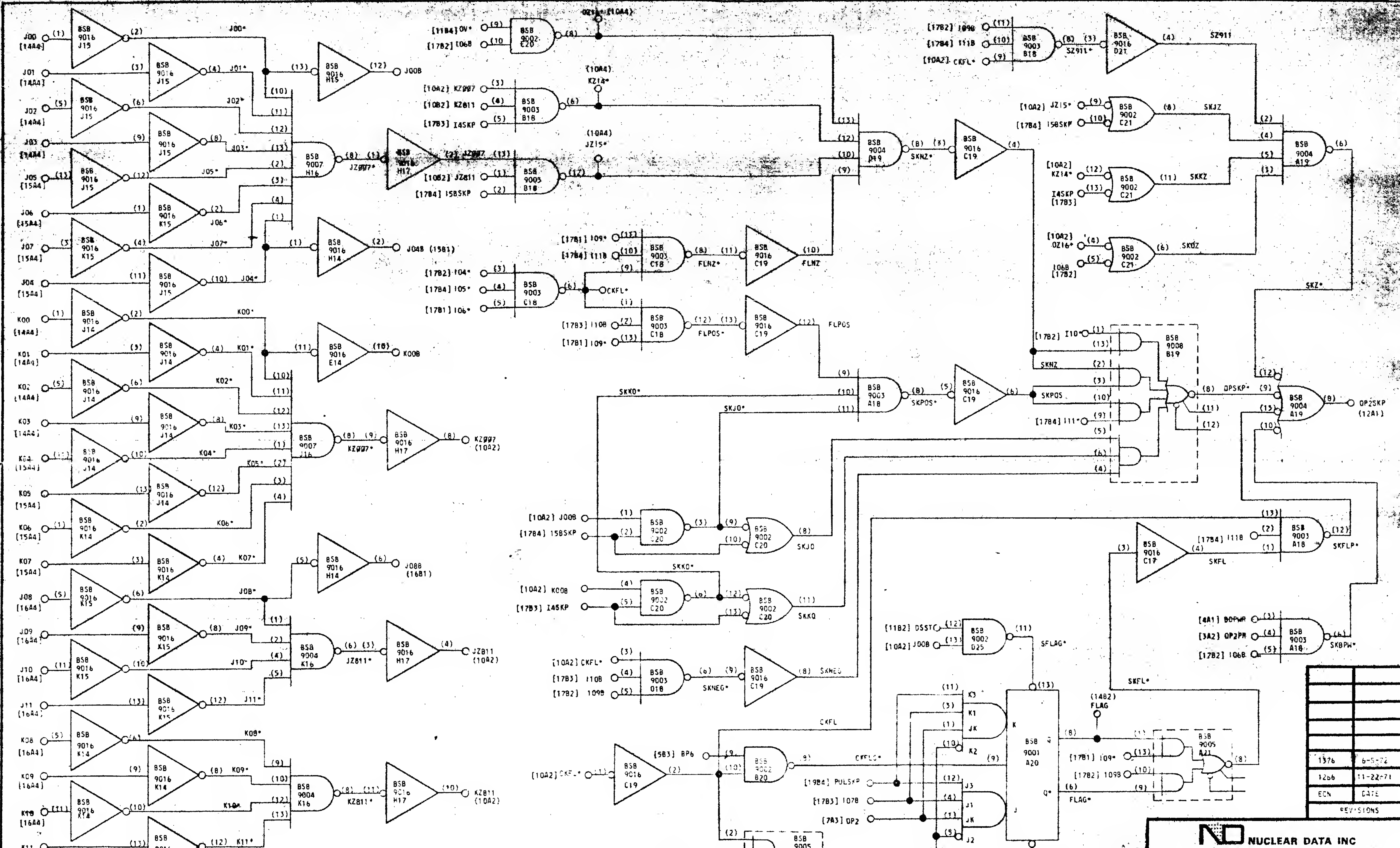


PREND
PREND*
BSB 9003 A01
BSB 9016 D11
BSB 9003 E01
STND*
BSB 9002 C01
REGCLK
SXCT*
XCTFF
XIFF*
BSB 9003 F01
BSB 9002 H01
HLTAS*
XCTFF*
U30-06
INDFF
INDFF*
LIT
ANL*
A12*
ADL*
ADLSBL
SBL*
SINDM*
XIFF
X*I*FF
INDM
INDM*
STDN7*
XCTND*
SPEI*
MPASS*
PEI*
PEI
CCLK
CPI*
SHFT3*
LDPR*
U30-54
LDPR
EXLDPR
EXLDMR
EXEXAM
LDPRMR
EXPMR
EXPMR*
EXAM*
LDMR
LDMR*
STSW
STSW*
LDST*
OUTST*
OUTST
IOBUT*
DIN
CSIOM*
IOMST
ALTER
MRI*
EMRI
CMRI
STCLR
DONE
PU7B
PU8B
I/OOSC
CPPU
NUCLEAR DATA INC
ND812
EXPRMR. IR CONTROL. MULTIPASS. LIT. IOM OUT. STR
SHEET 6 OF 28
DRAWN BY: T.E.D.
CHECKED BY
DATE DRAWN
L88 0397-01


NUCLEAR DATA INC
POST OFFICE BOX 451, PALATINE, ILLINOIS 60067
ND 812
DECADE, DONE, B ZERO, DMA SP. SIG
SHEET 7 OF 28
DRAWN BY
DATE DRAWN
CHECKED BY
APPROVED BY
L-88-0397-02


NUCLEAR DATA INC
ND 812
SELNX, MCI, RLOOP, ONCE, AND JK
SHEET 8 OF 28
DRAWN BY:
CHECKED BY:
DATE DRAWN:
APPROVED BY:


NUCLEAR DATA INC
ND 812
MXEN. CP. PE. STJK
SHEET 9 OF 26
DRAWN BY:
CHECKED BY:
DATE DRAWN:
APPROVED BY:



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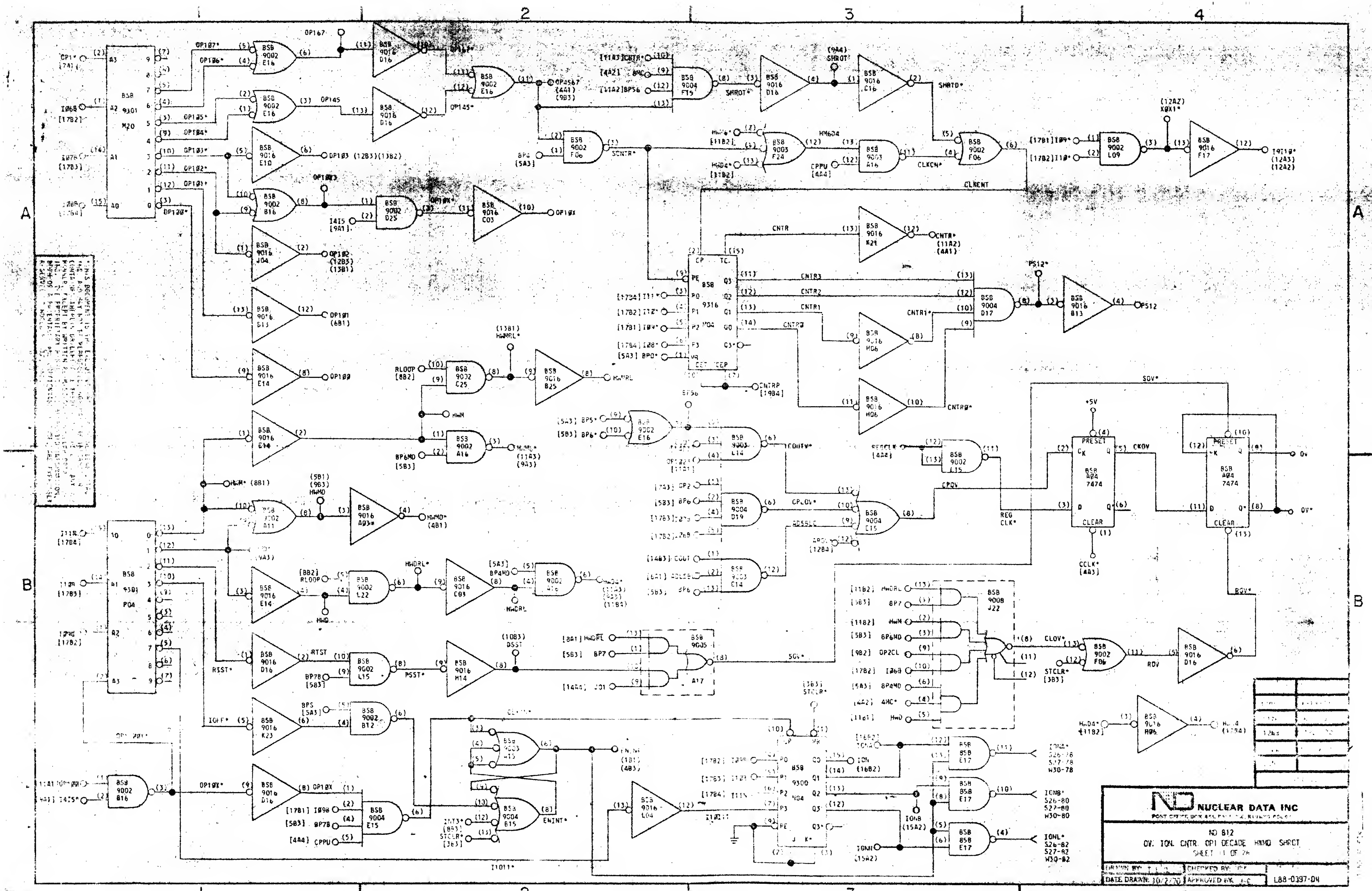
POST OFFICE BOX 451, PALATINE, ILLINOIS 60067

ND812
JKZERO, FLAG, OPZSKP
SHEET 10 OF 28

DRAWN BY: T.L.O. | CHECKED BY: R.L.
DATE DRAWN: 12-2-70 | APPROVED BY: G
88-03

ECN	DATE
1376	6-5-72
1266	11-22-71

REVISIONS



NUCLEAR DATA INC
ND 812
OV. ION. CNTR. OPI DECADE HWMD SHRCT
DATE DRAWN: 10/2/70
L88-0397-04
BSB 9301 M20
BSB 9301 P04
BSB 9316
BSB 9300 N04
BSB A04 7474
BSB 9008 J22
OP1Ø7*
OP1Ø6*
OP145
OP145*
OP1Ø3
OP1Ø2
OP1Ø1
OP1ØØ
OP1ØX
SHROT
SHRTD*
CLKCN*
CLKENT
CNTR
CNTR*
CNTR3
CNTR2
CNTR1
CNTR1*
CNTRØ
CNTRØ*
CNTRP
PS12*
PS12
HWMRL*
HWMRL
HWM
HWMD
HWMD*
COUTV*
CPLOV*
CPOV
SOV*
CKOV
REG CLK*
ROV*
CLOV*
ROV
OV
OV*
CCLK*
HWDRL*
HWDRL
HWD
RTST
RSST*
PSST*
DSST
SOV*
IOFF*
ENINT*
ION
IONA*
IONB*
IONL*
STCLR*
IOFF*

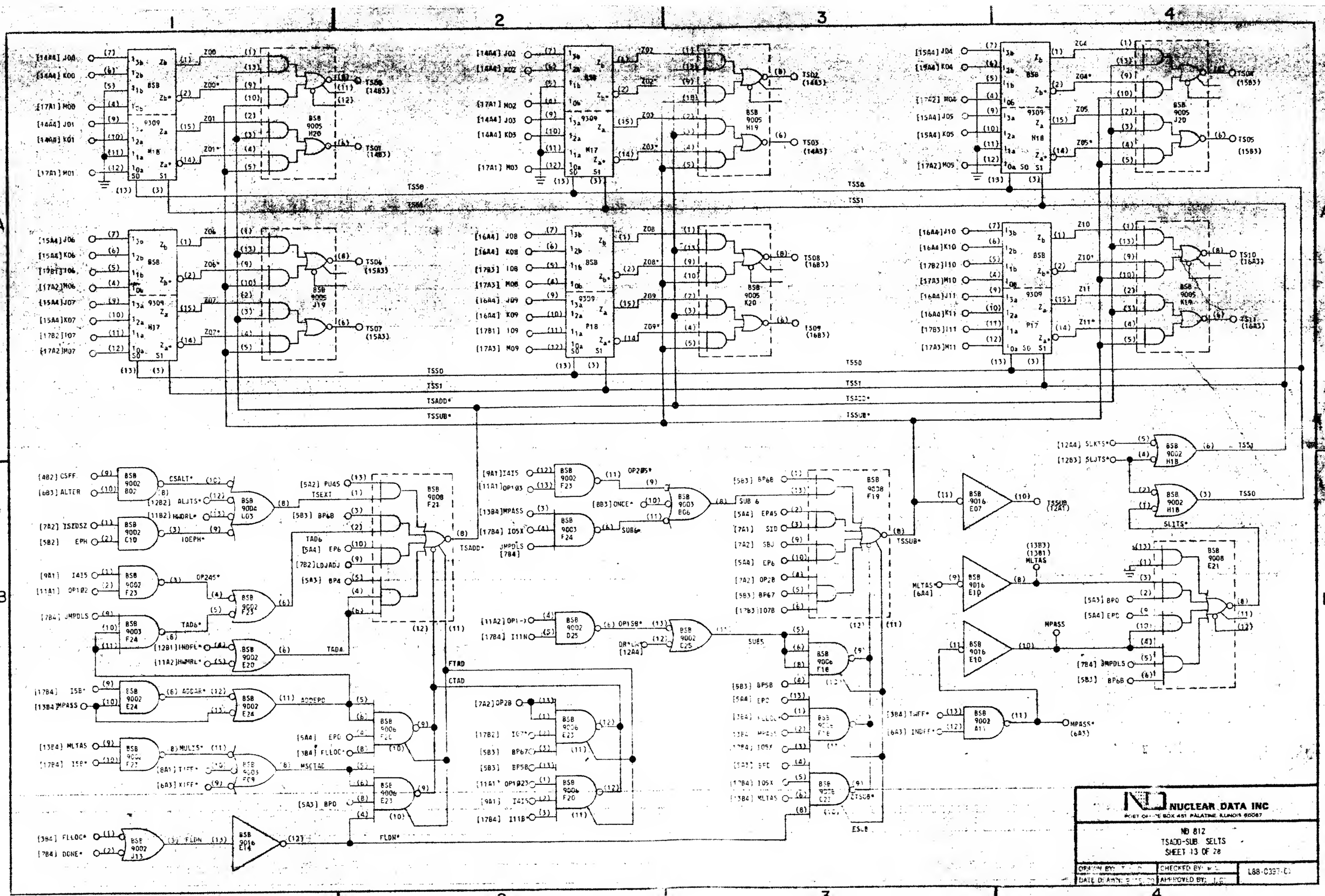
NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067

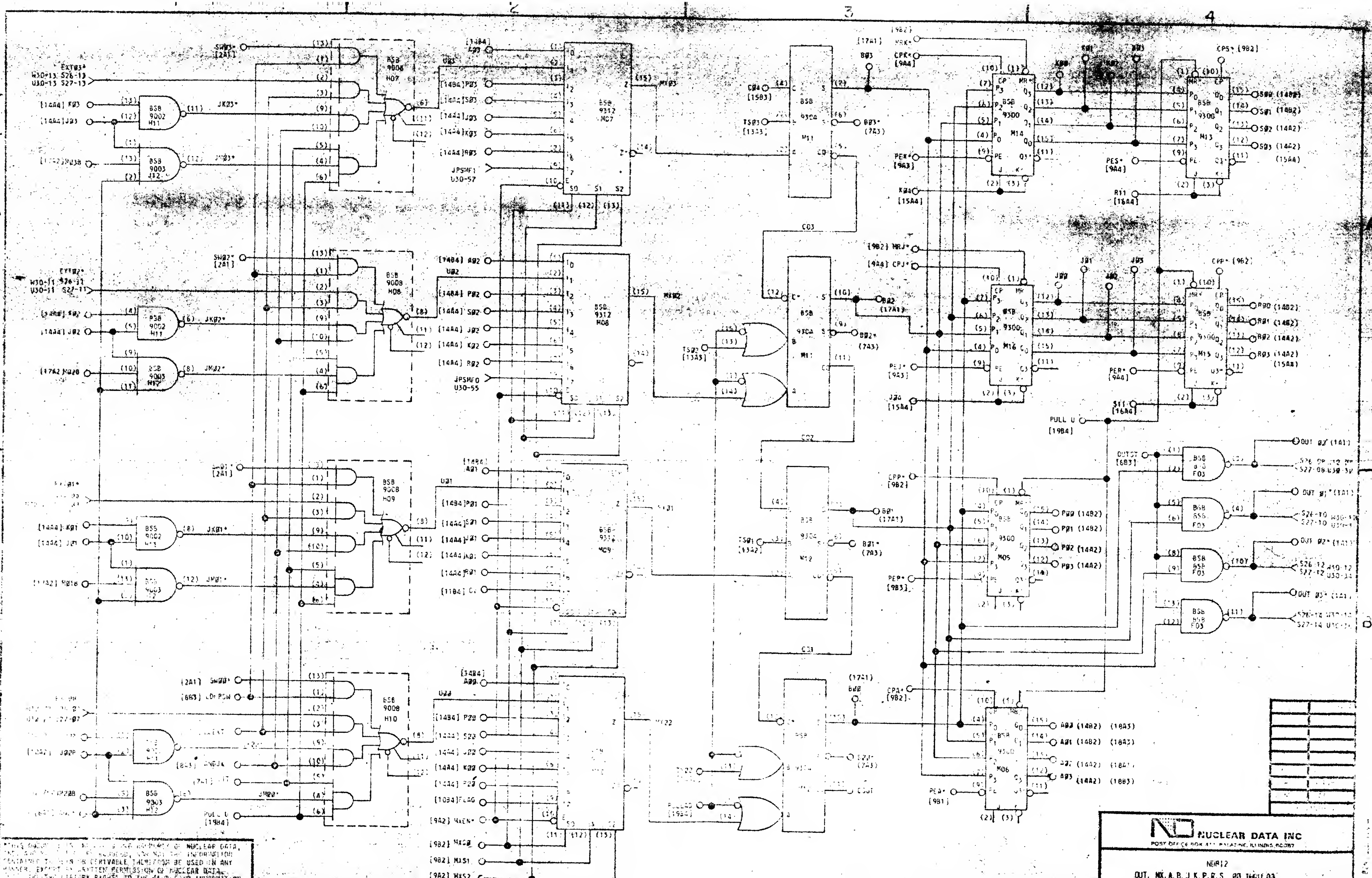
NO 812
CIN, AROV, RDB PEM SELJK
SHEET 12 OF 28

1404	A-19-72	
1266	11-22-71	
ECN	DATE	REVISION

DRAWN BY: T L G | CHECKED BY: P L
DATE DRAWN: 10/10/70 | APPROVED BY: J G

AB-0397-02


1
2
3
4
A
B
[14A4] J00
[14A4] K00
[17A1] M00
[14A4] J01
[14A4] K01
[17A1] M01
BSB 9009 M18
BSB 9005 H20
TS06 (14B3)
TS07 (14B3)
[14A4] J02
[14A4] K02
[17A1] M02
[14A4] J03
[14A4] K03
[17A1] M03
BSB 9009 M17
BSB 9005 H19
TS02 (14A3)
TS03 (14A3)
[15A4] J04
[15A4] K04
[17A2] M04
[15A4] J05
[15A4] K05
[17A2] M05
BSB 9009 N18
BSB 9005 J20
TS04 (15B3)
TS05 (15B3)
[15A4] J06
[15A4] K06
[17B1] I06
[17A2] M06
[15A4] J07
[15A4] K07
[17B2] I07
[17A2] M07
BSB 9009 M17
BSB 9005 J19
TS06 (15A3)
TS07 (15A3)
[16A4] J08
[16A4] K08
[17B3] I08
[17A3] M08
[16A4] J09
[16A4] K09
[17B1] I09
[17A3] M09
BSB 9009 P18
BSB 9005 K20
TS08 (16B3)
TS09 (16B3)
[16A4] J10
[16A4] K10
[17B2] I10
[17A3] M10
[16A4] J11
[16A4] K11
[17B3] I11
[17A3] M11
BSB 9009 P17
BSB 9005 K19
TS10 (16A3)
TS11 (16A3)
TSS0
TSS1
TSADD*
TSSUB*
[12A4] SLKTS*
[12B3] SLJTS*
BSB 9002 H18
TSS1
TSS0
SLJTS*
BSB 9016 E07
TSSUB (12A1)
[4B2] CSFF
[6B3] ALTER
BSB 9002 B07
CSALT*
[7B2] ISZDSZ
[5B2] EPH
BSB 9002 C10
IOEPH*
BSB 9004 L03
ALJTS*
H&DRL*
[5A2] PU45
TSEXT
[5B3] BP6B
[5A4] EP6
[7B2] LDJADJ
[5A3] BP4
TAD6
BSB 9008 F21
TSADD*
[9A1] I415
[11A1] OP1Ø2
BSB 9002 F23
OP245*
[7B4] JMPDLS
BSB 9003 F24
TAD6*
[12B1] INDFF*
[11A2] H&MRL*
BSB 9002 E20
TAD4
[17B4] ISB*
[13B4] MPASS
BSB 9002 E24
ADDAR*
ADDEPO
[13B4] MLTAS
[17B4] ISP*
BSB 9004 F22
MULTS*
[8A1] TIFF*
[6A3] XIFF*
BSB 9005 F09
MSCTAC
[5A4] EPO
[3B4] FLLOC*
[5A3] BPO
BSE 9006 E23
BSB 9006 F20
FTAD
CTAD
FLDN*
[3B4] FLLOG*
[7B4] DONE*
BSB 9002 J13
FLDN
BSB 9016 E14
[9A1] I415
[11A1] OP1Ø3
[13B4] MPASS
[17B4] IOSX
JMPDLS [7B4]
BSB 9002 F23
OP2Ø5*
[BB3] ONCE*
SUB6*
BSB 9003 BG6
[11A2] OP1-X
[17B4] I11N
BSB 9002 D25
OP1SB*
DR*LW [12A4]
BSB 9002 D25
[5B3] BP6B
SUB 6
[5A4] EP45
[7A1] SID
[7A2] SBJ
[5A4] EP6
[7A2] OP2B
[5B3] BP67
[17B3] I07B
BSB 9008 F19
SUB5
[5B3] BP5B
[5A4] EPO
[3B4] FLLOC*
[13B4] MPASS
[17B4] IOSX
[5A3] BPE
[13B4] MLTAS
BSB 9008 F18
BSB 9008 F16
BSB 9008 E22
ESUB
TSSUB*
[7A2] OP2B
[17B2] I07*
[5B3] BP67
[5B3] BP5B
[11A1] OP1Ø3
[9A1] I415
[17B4] I11B
BSB 9006 E22
BSB 9006 F20
[13B3] (13B1) MLTAS
MLTAS [6A4]
BSB 9016 E10
MPASS
[5A3] BPO
[5A4] EPO
[7B4] JMPDLS
[5B3] BP6B
BSB 9008 E21
[3B4] TWFF*
[6A3] INDFF*
BSB 9002 A11
MPASS* (6A3)
NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067
ND 812
TSADD-SUB SELTS
SHEET 13 OF 28
DRAWN BY:
CHECKED BY:
DATE DRAWN:
APPROVED BY:
L88-0397-01
PENDING ECN



NUCLEAR DATA INC

POST OFFICE BOX 451 PALATINE, ILLINOIS 60067

NDR12

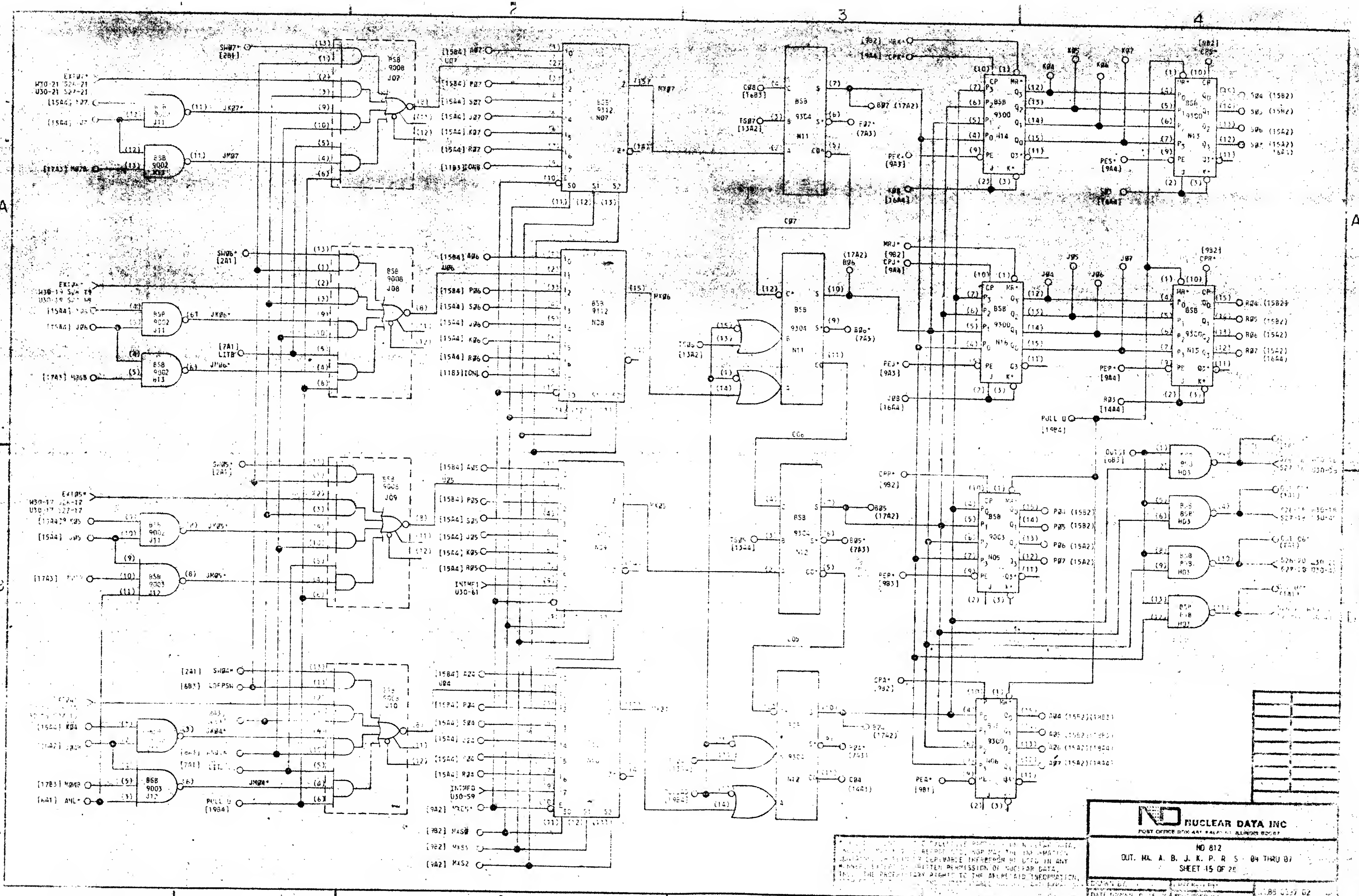
OUT, MX, A, B, J, K, P, R, S, Ø0 THRU Ø3

SHEET 14 OF 2?

DRAWN BY: T.L.D. | CHECKED BY:

DATE DRAWN: | APPROVED BY:

L68-0397-02

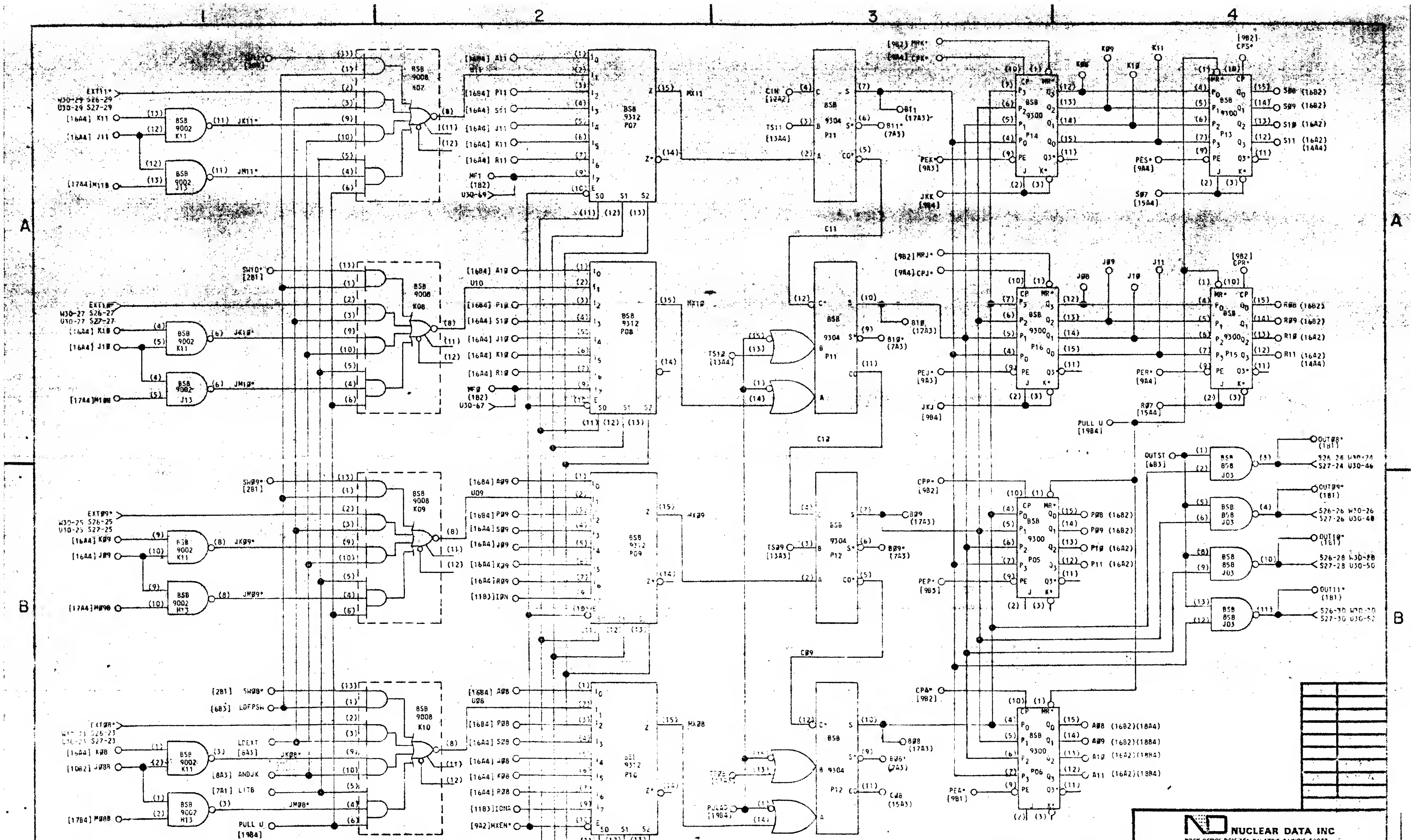


NUCLEAR DATA INC

ND 812

OUT. MX. A. B. J. K. P. R. S. 04 THRU 07

SHEET 15 OF 25

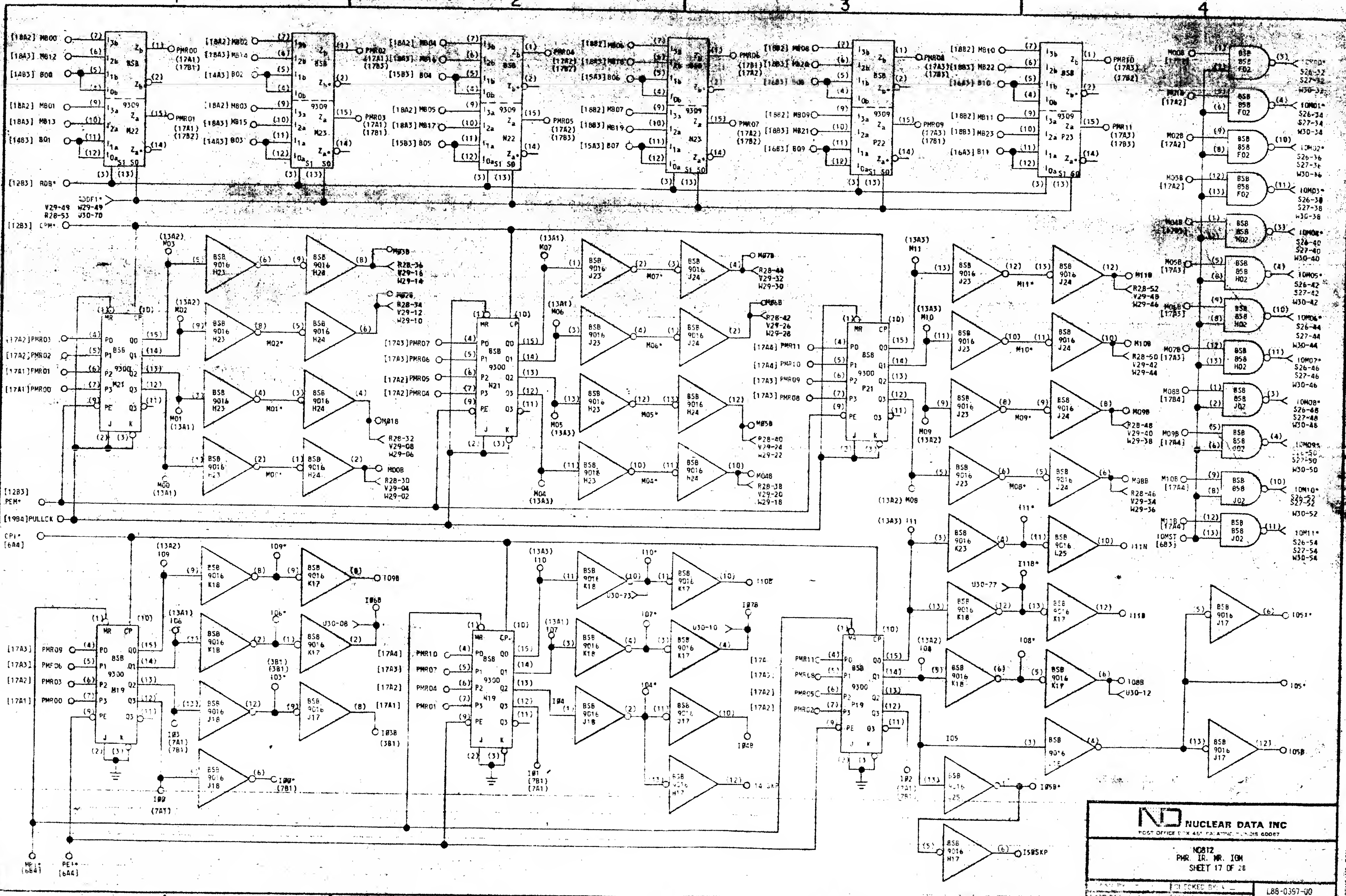


NUCLEAR DATA INC
POST OFFICE BOX 451, PALATINE ILLINOIS 60067

ND 812
OUT. MX. A. B. J. K. P. R. S : Ø8 THRU 11
SHEET 16 OF 28

DRAWN BY: T L D | CHECKED BY:
DATE DRAWN: 9/15/70 | APPROVED BY: G

L88-0337-02


NUCLEAR DATA INC
ND8TZ
PMR. IR. MR. IOM
SHEET 17 OF 28
L88-0397-00
PENDING ECN

PULL UP [19B4]

MSØØ* R28-05 W29-01
MSØ1* R28-09 W29-05
MSØ2* R28-13 W29-09
MSØ3* R28-17 W29-13

BSB 9314 M24

MBØØ (17A1) R28-57 W29-04
MBØ1 (17A1) R28-59 W29-08
MBØ2 (17A1) R28-61 W29-12
MBØ3 (17A1) R28-63 W29-16

RMB*

MSØ4* R28-21 W29-17
MSØ5* R28-25 W29-21
MSØ6* R28-29 W29-25
MSØ7* R28-33 W29-29

BSB 9314 N24

MBØ4 (17A2) R28-65 W29-20
MBØ5 (17A2) R28-67 W29-24
MBØ6 (17A2) R28-69 W29-26
MBØ7 (17A2) R28-71 W29-32

MSØ8* R28-37 W29-33
MSØ9* R28-41 W29-37
MS1Ø* R28-45 W29-41
MS11* R28-49 W29-45

BSB 9314 P24

MBØ8 (17A3) R28-73 W29-34
MBØ9 (17A3) R28-75 W29-40
MB1Ø (17A3) R28-77 W29-42
MB11 (17A3) R28-79 W29-48

PUP8 [5A2] → BSB 9016 J17 → PMB*

MS12* R28-02 V29-02
MS13* R28-11 V29-05

BSB 9314 M25

MB12 (17A1) R28-58 V29-02
MB13 (17A1) R28-60 V29-06
MB14 (17A1) R28-62 V29-10
MB15 (17A1) R28-64 V29-14

MS14* R28-15 V29-09
MS15* R28-19 V29-13

MS16* R28-23 V29-17
MS17* R28-27 V29-21

BSB 9314 N25

MB16 (17A2) R28-66 V29-18
MB17 (17A2) R28-68 V29-22
MB18 (17A2) R28-70 V29-28
MB19 (17A2) R28-72 V29-30

MS18* R28-31 V29-25
MS19* R28-35 V29-29

MS2Ø* R28-39 V29-33
MS21* R28-43 V29-37

BSB 9314 P25

MB2Ø (17A3) R28-74 V29-36
MB21 (17A3) R28-76 V29-38
MB22 (17A3) R28-78 V29-44
MB23 (17A3) R28-80 V29-46

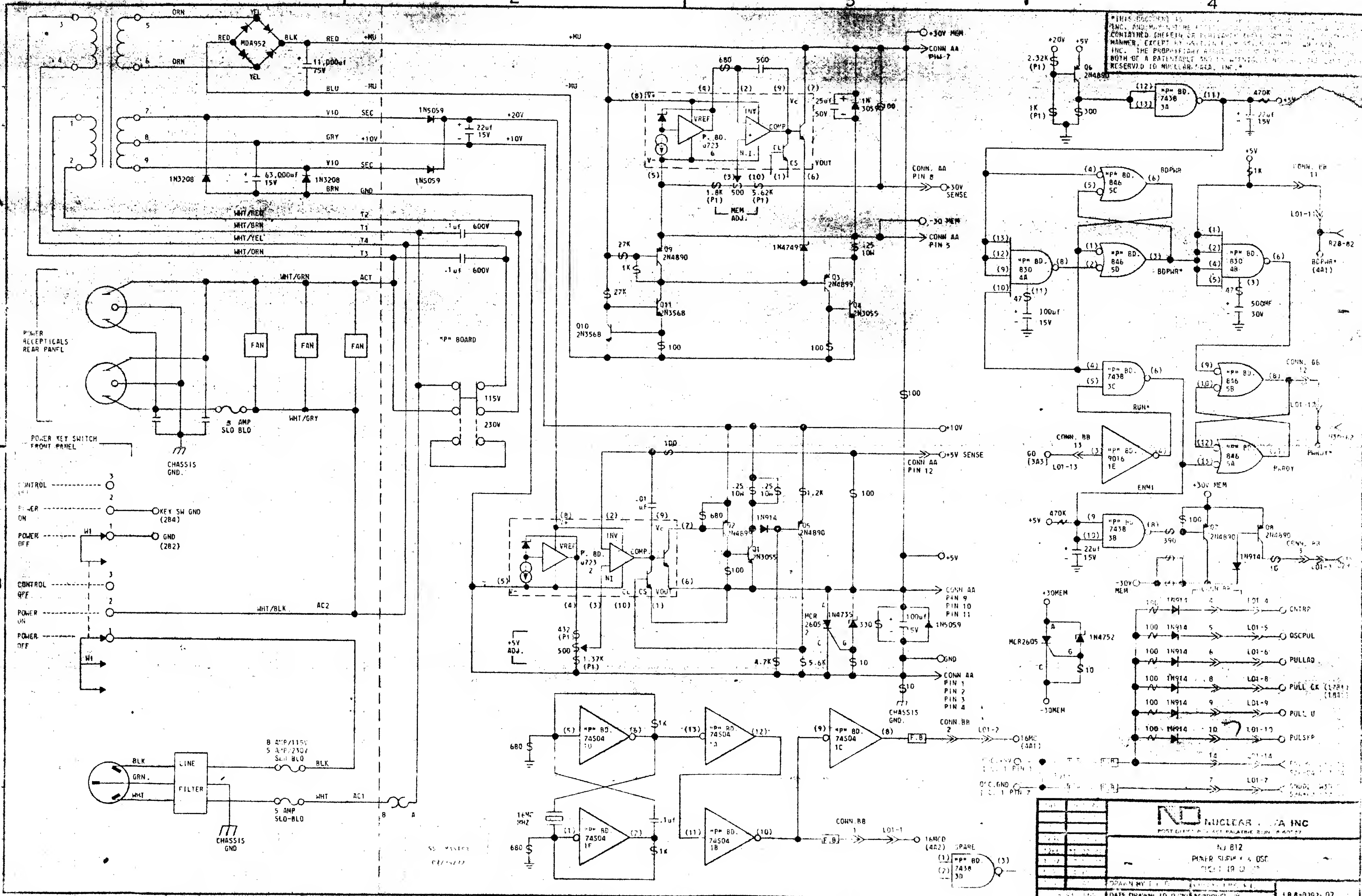
MS22* R28-47 V29-41
MS23* R28-51 V29-45

AØØ [14B4] → BSB 9016 K24 → AØØ* U29-02 U30-31 R28-06
AØ1 [14B4] → BSB 9016 K24 → AØ1* U29-04 U30-33 R28-08
AØ2 [14B4] → BSB 9016 K24 → AØ2* U29-06 U30-35 R28-10
AØ3 [14B4] → BSB 9016 K24 → AØ3* U29-08 U30-37 R28-12
AØ4 [15B4] → BSB 9016 L24 → AØ4* U29-20 U30-43 R28-18
AØ5 [15B4] → BSB 9016 K24 → AØ5* U29-12 U30-41 R28-16
AØ6 [15B4] → BSB 9016 L24 → AØ6* U29-22 U30-45 R28-20
AØ7 [15B4] → BSB 9016 L24 → AØ7* U29-24 U30-47 R28-22
AØ8 [16B4] → BSB 9016 L24 → AØ8* U29-26 U30-49 R28-24
AØ9 [16B4] → BSB 9016 L24 → AØ9* U29-14 U30-49 R28-24
AØA [15B4] → BSB 9016 K24 → AØA* U29-10 U30-39 R28-14
A1Ø [16B4] → BSB 9016 L24 → A1Ø* U29-16 U30-51 R28-26
AØB [15B4] → BSB 9016 K24 → AØB* U29-12 U30-41 R28-16
A11 [16B4] → BSB 9016 L24 → A11* U29-18 U30-53 R28-28

NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067

ND812
MBØØ-MS23 AND AØØ-A11*
SHEET 18 OF 28

DRAWN BY: TLD | CHECKED BY: RL | 9-14-76



NUCLEAR DATA INC

ND 812

POWER SUPPLY & OSC

DRAWN BY

DATE DRAWN 10 9

APPROVED BY

1B8-0397-07

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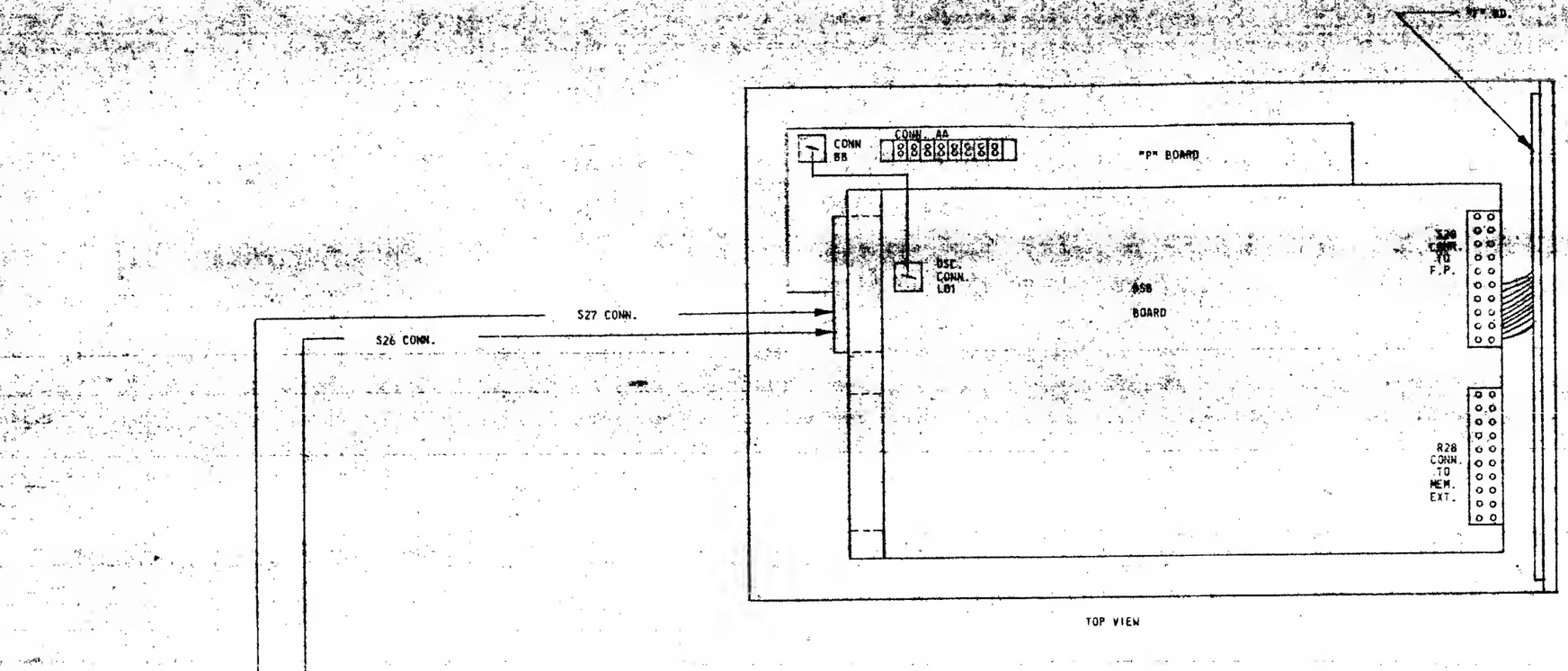
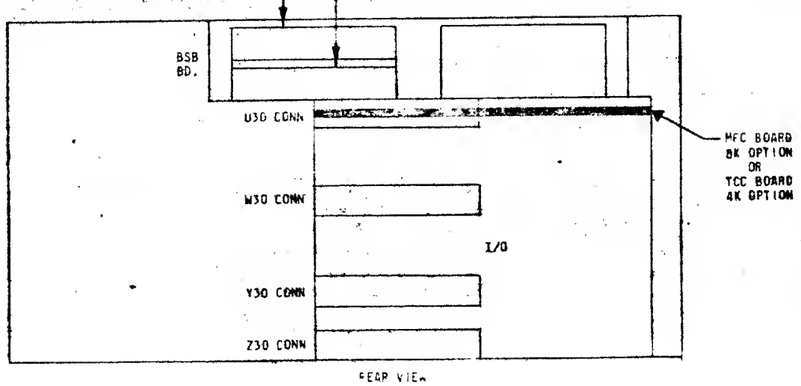
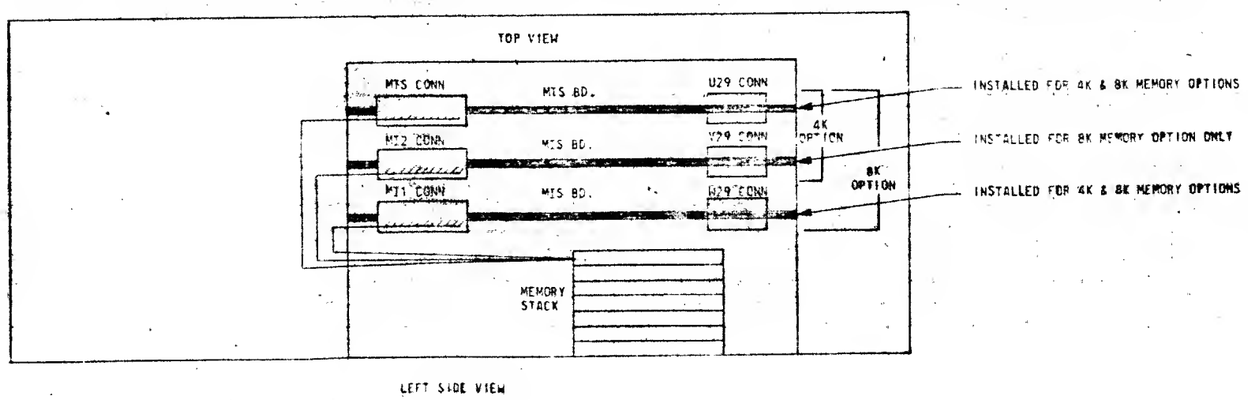


TOP VIEW



REAR VIEW



LEFT SIDE VIEW

NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE, ILLINOIS 60067

ND812
CONNECTOR LOCATIONS
SHEET 20 OF 28

DRAWN BY: T.L.D.	CHECKED BY: R.L.	
DATE DRAWN: [illegible]	APPROVED BY: [illegible]	188-0397-01

PEND 1960 ECN

MEMORY EXTENSION R28

PIN	SIGNAL	PIN	SIGNAL
1	XGND1 TO M22-88	2	XGND1 TO M22-88
3		4	
5	MS00* [18A1]	6	A00* [18A4]
7	MS12* [18A2]	8	A01* [18A4]
9	MS01* [18A1]	10	A02* [18A4]
11	MS13* [18A2]	12	A03* [18B4]
13	MS02* [18A1]	14	A04* [18B4]
15	MS14* [18A2]	16	A05* [18B4]
17	MS03* [18A1]	18	A06* [18A4]
19	MS15* [18A2]	20	A07* [18A4]
21	MS04* [18A1]	22	A08* [18B4]
23	MS16* [18A2]	24	A09* [18B4]
25	MS05* [18A1]	26	A10* [18B4]
27	MS17* [18A2]	28	A11* [18B4]
29	MS06* [18B1]	30	M00B [17B2]
31	MS18* [18B2]	32	M01B [17A2]
33	MS07* [18B1]	34	M02B [17A2]
35	MS19* [18B2]	36	M03B [17A2]
37	MS08* [18B1]	38	M04B [17B3]
39	MS20* [18B2]	40	M05B [17A3]
41	MS09* [18B1]	42	M06B [17A3]
43	MS21* [18B2]	4A	M07B [17A3]
45	MS10* [18B1]	46	M08B [17B4]
47	MS22* [18B2]	48	M09B [17A4]
49	MS11* [18B1]	50	M10B [17A4]
51	MS23* [18B2]	52	M11B [17A4]
53	ADDF1* (17A1)	54	ACLWR* [28A1]
55	ADDF1	56	MCLRX* [86A]
57	M00B [18A2]	58	MB12 [18A3]
59	MB01 [18A2]	60	MB13 [18A3]
61	MB02 [18B2]	62	MB14 [18B3]
63	MB03 [18A2]	64	MB15 [18A3]
65	MB04 [18A2]	66	MB16 [18A3]
67	MB05 [18A2]	68	MB17 [18A3]
69	MB06 [18B2]	70	MB18 [18A3]
71	MB07 [18B2]	72	MB19 [18B3]
73	MB08 [18B2]	74	MB20 [18B3]
75	MB09 [18B2]	76	MB21 [18B3]
77	MB10 [18B2]	78	MB22 [18B3]
79	MB11 [18B2]	80	MB23 [18B3]
81	GO [3A3]	82	BD PWR* [19A4]
83		84	EPRDY* (3B1)
85	XGND2 TO M25-B	86	XGND2 TO M25-B

MULTI FIELD CONTROL U30

PIN	SIGNAL	PIN	SIGNAL
1	GND01 TO S26-01	2	GND02 TO S26-02
3	P5V03 TO S26-03	4	P5V04 TO S26-04
5	EXTK* (9A2)	6	INDFF (6A3)
7	EXT00* (14B1)	8	INT8 [17B2]
9	EXT01* (14B1)	10	INT9 [17B3]
11	EXT02* (14A1)	12	INTA [17B4]
13	EXT03* (14A1)	14	JMP* [7B2]
15	EXT04* (15B1)	16	JPS* [7B2]
17	EXT05* (15B1)	18	PU00 [5A2]
19	EXT06* (15A1)	20	PU1B [5A2]
21	EXT07* (15A1)	22	EP1 [5A4]
23	EXT08* (16B1)	24	BP2B [5B4]
25	EXT09* (16B1)	26	EP0* [5A4]
27	EXT10* (16A1)	28	TWFF* [3B4]
29	EXT11* (16A1)	30	OUT00* [14B4]
31	A00* [18A4]	32	OUT01* [14B4]
33	A01* [18A4]	34	OUT02* [14B4]
35	A02* [18B4]	36	OUT03* [14B4]
37	A03* [18B4]	38	OUT04* [15B4]
39	A04* [18B4]	40	OUT05* [15B4]
41	A05* [18B4]	42	OUT06* [15B4]
43	A06* [18A4]	44	OUT07* [15B4]
45	A07* [18A4]	46	OUT08* [16B4]
47	A08* [18A4]	48	OUT09* [16B4]
49	A09* [18B4]	50	OUT10* [16B4]
51	A10* [18B4]	52	OUT11* [16B4]
53	A11* [18B4]	54	LDPR [6A2]
55	JPSMF0 (14A2)	56	CSEL* [A82]
57	JPSMF1 (14A2)	58	INTEF* [48A]
59	INTMF0 (15B2)	60	EP0 [5A4]
61	INTMF1 (15B2)	62	PWROK* [19A4]
63	POWER* (3B4)	64	CPPU* [4A3]
65	BP1 [5A3]	66	ADDF1
67	MF0 (16A2)	68	ADDF0 (8B3)
69	MF1 (16A2)	70	ADDF1* (17A1)
71	DIN* (6B3)	72	ADDF0* (8B3)
73	I10* [17B2]	74	SMF1* (2A4)
75	HLT (3B2)	76	SMF0* (2A4)
77	I11B* [17B3]	78	BP5* [5A3]
79	IWOSC [7B1]	80	BP6* [5B3]
81		82	TWJJS* (7B3)
83	P5V83 TO S26-83	84	P5V84 TO S26-84
85	GND85 TO S26-85	86	GND86 TO S26-86

MEMORY MIS U29

PIN	SIGNAL	PIN	SIGNAL
1	TM*	2	A00* [18A4]
3	TM- [19B4]	4	A01* [18A4]
5	MCIW* [8B4]	6	A02* [18A4]
7	WGATE2	8	A03* [18B4]
9	INHIB	10	A04* [18B4]
11	INHIB*	12	A05* [18B4]
13	WID	14	A09* [18B3]
15	MCIR* [8B4]	16	A10* [18B4]
17	STROBE	18	A11* [18B4]
19	R/W	20	A06* [18A4]
21	RGATE1	22	A07* [18A4]
23	WRITE	24	A08* [18A4]
25	READ*	26	
27		28	
29		30	
31		32	
33		34	
35		36	
37		38	
39		40	
41		42	
43		44	
45		46	
47		48	
49		50	
51		52	
53		54	
55	GND TO M24-88	56	GND
57	+5V	58	+5V
59	-V	60	-V

MEMORY MIS (2ND 4K) U29

PIN	SIGNAL	PIN	SIGNAL
1	MS12* [18A2]	2	MB12 [18A3]
3		4	M00B [17B2]
5	MS13* [18A2]	6	MB13 [18A3]
7		8	M01B [17A2]
9	MS14* [18A2]	10	MB14 [18A3]
11		12	M02B [17A2]
13	MS15* [18A2]	14	MB15 [18A3]
15		16	M03B [17A2]
17	MS16* [18A2]	18	MB16 [18A3]
19		20	M04B [17B3]
21	MS17* [18A2]	22	MB17 [18A3]
23		24	M05B [17A3]
25	MS18* [18B2]	26	M06B [17A3]
27		28	M07B [18A3]
29	MS19* [18B2]	30	MB19 [18B3]
31		32	M07B [17A3]
33	MS20* [18B2]	34	M08B [17B4]
35		36	MB20 [18B3]
37	MS21* [18B2]	38	MB21 [18B3]
39		40	M09B [17A4]
41	MS22* [18B2]	42	M10B [17A4]
43		4A	MB22 [18B3]
45	MS23* [18B2]	A6	MB23 [18B3]
47		48	M11B [17A4]
49	ADDF1* (17A1)	50	
51	ADDF1	52	
53	INHIB	54	STROBE
55	GND TO M21-88	56	GND TO M25-88
57	+5V	58	+5V
59	-V	60	-V

MEMORY MIS (1ST 4K) U29

PIN	SIGNAL	PIN	SIGNAL
1	MS00* [18A1]	2	M00B [17B2]
3		4	MB00 [18A2]
5	MS01* [18A1]	6	MB1B [17A2]
7		8	MB01 [18A2]
9	MS02* [18A1]	10	M02B [17A2]
11		12	MB02 [18A2]
13	MS03* [18A1]	14	M03B [17A2]
15		16	MB03 [18A2]
17	MS04* [18A1]	18	M04B [17B3]
19		20	MB04 [18A2]
21	MS05* [18A1]	22	M05B [17A3]
23		24	MB05 [18A2]
25	MS06* [18B1]	26	MB06 [18B2]
27		28	M06B [17A3]
29	MS07* [18B1]	30	M07B [17A3]
31		32	MB07 [18B2]
33	MS08* [18B1]	34	MB08 [18B2]
35		36	M08B [17B4]
37	MS09* [18B1]	38	M09B [17A4]
39		40	MB09 [18B2]
41	MS10* [18B1]	42	MB10 [18B2]
43		4A	M10B [17A4]
45	MS11* [18B1]	A6	M11B [17A4]
47		48	MB11 [18B2]
49	ADDF1* (17A1)	50	
51	ADDF1	52	
53	INHIB	54	STROBE
55	GND TO M24-88	56	GND TO M25-88
57	+5V	58	+5V
59	-V	60	-V

	1-24-72
	11-29-71
	2-4-72
REVISIONS	

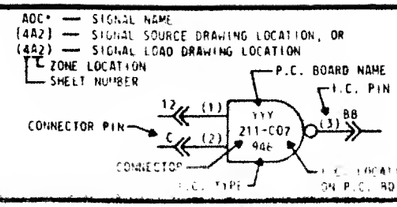
NOTES:

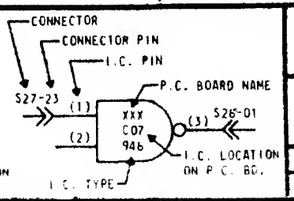
1 - ALL DIODES ARE 6964 OR EQUIVALENT, EXCEPT AS NOTED.
2 - ALL RESISTORS ARE 1/4W, ±5%, EXCEPT AS NOTED.
3 - ALL CAPACITORS ARE pf, EXCEPT AS NOTED.
4 - I.C. VOLTAGES, EXCEPT AS NOTED:
  14 PIN DIP, PIN (7) GND: PIN (14) +5V
  16 PIN DIP, PIN (8) GND: PIN (16) +5V
  24 PIN DIP, PIN (12) GND: PIN (24) +5V

S - THE FOLLOWING SYMBOLS/NOTATIONS ARE USED ON THE DIAGRAM AND/OR PRINTED CIRCUIT BOARD ASSEMBLY.

IC - INTEGRATED CIRCUIT
Q - TRANSISTOR
( ) - IC PIN DESIGNATION
- CONNECTOR DESIGNATION
NC - NO CONNECTION
SA1 - SELECT AT TEST
(P1) - PRECISION RESISTORS 100PPM 1/8W, ±1% METAL FILM
- DC COMMON
FB - FERRITE BEAD
- GERMANIUM DIODE
- SILICON DIODE
- ZENER DIODE
- TUNNEL DIODE
- SELENIUM DIODE

A0C* — SIGNAL NAME
(4A2) — SIGNAL SOURCE DRAWING LOCATION, OR
(4A2) — SIGNAL LOAD DRAWING LOCATION
ZONE LOCATION
SHEET NUMBER





NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067

ND 812
MEMORY CONNECTORS
SHEET 21 OF 28

DRAWN BY: TLD	CHECKED BY: RL	
DATE DRAWN: 9-72	APPROVED BY: JG	L88-0397-02

PENDING ECN

I/O CABLE CONNECTORS S26 & S27

PIN	SIGNAL	PIN	SIGNAL
1	GNDØ1 TO J01-7	2	GNDØ2 [1984]
3	P5VØ3 TO J01-14	4	P5VØ4 [1984]
5	DIN* (6B3)	6	EXGO* [3A4]
7	[illegible] (14B1)	8	OUTØØ* [14B4]
9	EXTØ1* (14B1)	10	OUTØ1* [14B4]
11	EXTØ2* (14A1)	12	OUTØ2* [14B4]
13	EXTØ3* (14A1)	14	OUTØ3* [14B4]
15	EXTØ4* (15B1)	16	OUTØ4* [15B4]
17	EXTØ5* (15B1)	18	OUTØ5* [15B4]
19	EXTØ6* (15A1)	20	OUTØ6* [15B4]
21	EXTØ7* (15A1)	22	OUTØ7* [15B4]
23	EXTØ8* (16B1)	24	OUTØ8* [16B4]
25	EXTØ9* (16B1)	26	OUTØ9* [16B4]
27	EXT1Ø* (16A1)	28	OUT1Ø* [16B4]
29	EXT11* (16A1)	30	OUT11* [16B4]
31	EXTK* (9A2)	32	IOMØØ* [17A4]
33	EINTR* (4B3)	34	IOMØ1* [17A4]
35	XINTP* [4B4]	36	IOMØ2* [17A4]
37	CSR* (4B1)	38	IOMØ3* [17A4]
39	EXCSP* [4B2]	40	IOMØ4* [17A4]
41	ALTER* (6B3)	42	IOMØ5* [17A4]
43	SDCS* (4B2)	44	IOMØ6* [17A4]
45	[illegible] [7A4]	46	IOMØ7* [17A4]
47	MRDY* [7B4]	48	IOMØ8* [17A4]
49	PCPØ* [5B4]	50	IOMØ9* [17A4]
51	PCP1* [5B4]	52	IOM1Ø* [17B4]
53	PCP2* [5B4]	54	IOM11* [17B4]
55	PCP3* [5B4]	56	IOCOM* [7B2]
57	SMFØØ* [2A4]	58	XSTCL* [3B3]
59	SMFØ1* [2A4]	60	EXGO [3A4]
61	EXSKP* (12A1)	62	PCPST* [4A4]
63	START* [2A2]	64	ALODT* (2B3)
65	STOP* [2A3]	66	EXCLJ* (9B1)
67	CONT* (2A2)	68	TSTD* (12B2)
69	EEXAM* (2A3)	70	EMXSØ* [2B3]
71	XLDPR* [2A3]	72	EMXS1* [2B3]
73	XLDMR* [2A4]	74	EMXS2* [2B3]
75	SI* [2A3]	76	ARMX* (8A1)
77	CSPO*	78	IONA* [11B4]
79	ECHO* (6B3)	80	IONB* [11B4]
81	INTPO*	82	IONL* [11B4]
83	P5V83 TO P01-16	84	P5V84 TO M01-16
85	GND85 TO P01-8	86	GND86 TO M01-8

I/O P.C. BD. CONNECTORS W30, Y30 AND Z30

PIN	SIGNAL	PIN	SIGNAL
1	GNDØ1 TO J01-7	2	GNDØ2 [1984]
3	P5VØ3 TO J01-14	4	P5VØ4 [1984]
5	DIN* (6B3)	6	EXGO* [3A4]
7	EXTØØ* (14B1)	8	OUTØØ* [14B4]
9	EXTØ1* (14B1)	10	OUTØ1* [14B4]
11	EXTØ2* (14A1)	12	OUTØ2* [14B4]
13	EXTØ3* (14A1)	14	OUTØ3* [14B4]
15	EXTØ4* (15B1)	16	OUTØ4* [15B4]
17	EXTØ5* (15B1)	18	OUTØ5* [15B4]
19	EXTØ6* (15A1)	20	OUTØ6* [15B4]
21	EXTØ7* (15A1)	22	OUTØ7* [15B4]
23	EXTØ8* (16B1)	24	OUTØ8* [16B4]
25	EXTØ9* (16B1)	26	OUTØ9* [16B4]
27	EXT1Ø* (16A1)	28	OUT1Ø* [16B4]
29	EXT11* (16A1)	30	OUT11* [16B4]
31	EXTK* (9A2)	32	IOMØØ* [17A4]
33	EINTR* (4B3)	34	IOMØ1* [17A4]
35	XINTP* [4B4]	36	IOMØ2* [17A4]
37	CSR* (4B1)	38	IOMØ3* [17A4]
39	EXCSP* [4B2]	40	IOMØ4* [17A4]
41	ALTER* (6B3)	42	IOMØ5* [17A4]
43	SDCS* (4B2)	44	IOMØ6* [17A4]
45	CSMRZ* [7A4]	46	IOMØ7* [17A4]
47	MRDY* [7B4]	48	IOMØ8* [17A4]
49	PCPØ* [5B4]	50	IOMØ9* [17A4]
51	PCP1* [5B4]	52	IOM1Ø* [17B4]
53	PCP2* [5B4]	54	IOM11* [17B4]
55	PCP3* [6B4]	56	IOCOM* [7B2]
57	SMFØØ* [2A4]	58	XSTCL* [3B3]
59	SMFØ1* [2A4]	60	M25V
61	EXSKP* (12A1)	62	PCPST* [4A4]
63	START* [2A2]	64	ALODT* (2B3)
65	STOP* [2A3]	66	EXCLJ* (9B1)
67	CONT* (2A2)	68	TSTD* (12B2)
69	EEXAM* (2A3)	70	EMXSØ* [2B3]
71	XLDPR* [2A3]	72	EMXS1* [2B3]
73	XLDMR* [2A4]	74	EMXS2* [2B3]
75	SI* [2A3]	76	ARMX* (8A1)
77	CSPO*	78	IONA* [11B4]
79	ECHO* (6B3)	80	IONB* [11B4]
81	INTPO*	82	IONL* [11B4]
83	P5V83 TO P01-16	84	P5V84 TO M01-16
85	GND85 TO P01-8	86	GND86 TO M01-8

FRONT PANEL S28

PIN	SIGNAL	PIN	SIGNAL
1		2	
3		4	
5		6	
7		8	
9		10	
11		12	
13		14	
15		16	
17		18	
19		20	
21		22	
23		24	
25	M318 (1A2)	26	EMXSC* [2B3]
27	-5L (2B4)	28	+5L (2B4)
29	OV (1B1)	30	EMXS1* [2B3]
31	MF1 (1B2)	32	ALCDT* (2B3)
33	MFØ (1B2)	34	XLDMR* [2A4]
35	MØ28 (1A2)	36	EMXS2* [2B3]
37	MØ38 (1A2)	38	XLDPR* [2A3]
39	MØ2B (1A2)	40	BLST1* [2B4]
41	OUTØ1* (1A1)	42	SMFØ2* [2A4]
43	OUTØ2* (1A1)	44	SMFØ1* [2A4]
45	OUTØ3* (1A1)	46	EXGO* (1B1)
47	OUTØ4* (1A1)	48	SWØØ* [2A1]
49	OUTØØ* (1A1)	50	SWØ1* [2A1]
51	OUTØ5* (1A1)	52	SWØ2* [2A1]
53	SI* [2A3]	54	SWØ3* [2A1]
55	SS* [2A4]	56	SWØ4* [2A1]
57	[illegible] (2A4)	58	[illegible] (2B4)
59	M25B (1A2)	60	SWØ5* [2A1]
61	M26B (1A2)	62	SWØ6* [2A1]
63	M27B (1A2)	64	[illegible] [2B1]
65	M24B (1A2)	66	SWØ7* [2B1]
67	OUTØ6* (1A1)	68	SWØ8* [2B1]
69	OUT1Ø* (1B1)	70	SWØ9* [2B1]
71	OUTØ7* (1A1)	72	SW1Ø* [2B1]
73	OUTØ8* (1B1)	74	SW11* [2B1]
75	OUT11* (1B1)	76	ENINT (1B1)
77	OUTØ9* (1B1)	78	EEXAM* [2A3]
79	MØ35 (1B2)	80	START* [2A2]
81	M125 (1B2)	82	CONT* [2A2]
83	M115 (1B2)	84	
85	M35B (1B2)	86	STOP* [2A3]

P BOARD

AA CONNECTOR	
PIN	SIGNAL
1	GND [1983]
2	GND [1983]
3	GND [1983]
4	GND [1983]
5	-30 MEM [19A3]
6	
7	+30V MEM [19A3]
8	+30V SENSE [19A3]
9	+5V [1983]
10	+5V [1983]
11	+5V [1983]
12	+5V SENSE [1983]

BB CONNECTOR	
PIN	SIGNAL
1	16MCD [1983]
2	16MC [1983]
3	-TH [1984]
4	CNTRP [1984]
5	OSCPUL [1984]
6	PULLAD [1984]
7	GNDØ2 [1984]
8	PULLCK [1984]
9	PULLU [1984]
10	PULSKP [1984]
11	BDPWR* [19A4]
12	PWRDY* [19A4]
13	GO [19A4]
14	P5VØ5 [1984]

BSB

LO1 CONNECTOR	
PIN	SIGNAL
1	16MCD [1983]
2	16MC [1983]
3	-TH [1984]
4	CNTRP [1984]
5	OSCPUL [1984]
6	PULLAD [1984]
7	GNDØ2 [1984]
8	PULLCK [1984]
9	PULLU [1984]
10	PULSKP [1984]
11	BDPWR* [19A4]
12	PWRDY* [19A4]
13	GO [19A4]
14	P5VØ5 [1984]

NOTES:

1 - ALL DIODES ARE S964 OR EQUIVALENT, EXCEPT AS NOTED.

2 - ALL RESISTORS ARE 1/4W, ±5%, EXCEPT AS NOTED.

3 - ALL CAPACITORS ARE pf, EXCEPT AS NOTED.

4 - I.C. VOLTAGES, EXCEPT AS NOTED:

14 PIN DIP, PIN (7) GND: PIN (14) +5V

16 PIN DIP, PIN (8) GND: PIN (16) +5V

24 PIN DIP, PIN (12) GND: PIN (24) +5V

5 - THE FOLLOWING SYMBOLS/NOTATIONS ARE USED ON THE DIAGRAM AND/OR PRINTED CIRCUIT BOARD ASSEMBLY.

IC - INTEGRATED CIRCUIT

Q - TRANSISTOR

( ) - IC PIN DESIGNATION

→ - CONNECTOR DESIGNATION

NC - NO CONNECTION

SAT - SELECT AT TEST

(P1) - PRECISION RESISTORS 100PPM 1/8W, ±1% METAL FILM

- DC COMMON

FB - FERRITE BEAD

- GERMANIUM DIODE

- SILICON DIODE

- ZENER DIODE

- TUNNEL DIODE

- SELENIUM DIODE

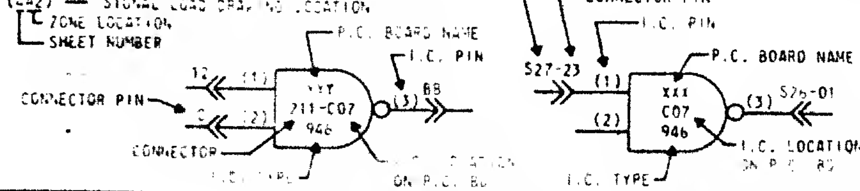
ABC* — SIGNAL NAME

[4A2] — SIGNAL SOURCE DRAWING LOCATION, OR

(4A2) — SIGNAL LOAD DRAWING LOCATION

ZONE LOCATION

SHEET NUMBER



NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE, ILLINOIS 60067

ND812
I/O "P" BOARD AND OSC CONNECTOR
SHEET 22 OF 28

DRAWN BY: [illegible] CHECKED BY: [illegible]
DATE DRAWN: [illegible] APPROVED BY: [illegible]

ADDSB? [illegible] (12A3) (12A4) (12B4)
ADLSBL (6A1) (7B3) (11B3) (12A3)
ALODT (8A1) (8A2) (8A3) (12B2)
ALODT* (2B3) (3A3) (6B2) (6B3) (8A1)
ALTER (6B3) (8A4) (12B1) (12B2) (13B1)
ANDJK (8A3) (14B1) (15B1) (16B1)
ANL* (6A1) (7B3) (14A1) (15B1)
BP0 (5A3) (8A1) (8A3) (9B3) (12B1) (13B1) (13A3) (13B4)
BP4 (5A3) (4A3) (6A1) (8B3) (9B3) (11A2) (12A1) (12A4) (12A1) (12A2) (13B1)
BP4MD (5A3) (8A1) (9A3) (9A4) (9B3) (11B2) (11B3) (12B3) (12B4) (12B4)
BP5 (5A3) (3B2) (3B3) (12A1) (12A3) (12A4) (12A4) (11B1)
BP5* (5A3) (5A3) (8B1) (8B2) (11A2) (3B4)
BP56 [illegible]
BP5B (5B3) (8B4) (9B2) (12B3) (13B3) (13B2)
BP5MD (5B3) (8A1) (9A2) (9A3) (9A4) (9B2) (12B1) (12B1) (12B4) (8B1)
BP6 (5B3) (6A2) (7B4) (8B1) (9B3) (9A3) (10B2) (11B3) (11B3) (12A3) (12A4)
BP67 (5B3) (6B2) (12A1) (13B2) (13B3) (12B4)
BP6B (5B3) (3A3) (8A1) (8A3) (8B4) (9B2) (12A4) (12B3) (13B2) (13B3) (13B4)
BP6MD (5B3) (5B1) (8A1) (8B1) (9A4) (9A4) (9A4) (11B2) (11B3) (12A2) (12B1)
BP7 (5B3) (8B3) (9A3) (9B3) (9B1) (11B2) (11B3) (12A1) (12B3) (12B4)
CKFL* (10A2) (10B2) (10B2) (10A3)
CMPBP [illegible]
COUT (14B3) (11B2) (11B2) (12B4) (12B4) (12B4)
CPA* (9B2) (14B3) (15B3) (16A3)
CPB* (9A4) (14A3) (15A3) (16A3)
CPK* (9A4) (14A3) (15A3) (16A3)
CPP* (9B2) (14B3) (15B3) (16B3)
CPPU (4A4) (3A2) (4A3) (6B4) (11A3) (11B1)
CPR* (9B2) (14A4) (15A4) (16A4)
CPS* (9B2) (14A4) (15A4) (16A4)
CSFF (4B2) (8A1) (8A4) (12B1) (12B1) (12A1) (12B2) (13B1)
CSFF* (4B2) (4B3) (4B4) (7A2)
CSP* (4B2) (8A1) (8A2) (12A1)
DIN (6B3) (8B3) (9A2) (9A2) (12B1) (12B1)
DIN* (6B3) (8A4) (12B3) (12A3)
EP0 (5A4) (8A1) (13B1) (13B3) (13B4)
EP1 (5A4) (8B4) (9B3) (12A1)
EP3 (5A4) [illegible]
EP4 (5A4) (8A4) (12A1) (12B2)
EP4S (5A4) (12A3) (12A4) (13B3)
EP6 (5A4) (8A1) (8B4) (9A3) (9B3) (9B3) (12A1) (12A3) (12A4) (12B4) (13B1) (13B3)
EXPMR* (6B2) (3A3) (3B2) (6B3) (9A1)
FFLOC (3B4) (8A4) (8A4) (12B1)
FFLOC* (3B4) (7B3) (8A1) (8B3) (13B1) (13B1) (13B3)
GO (3A3) (3A2) (3A4) (4B1) (5B2) (19B4)
GO* (3A3) (3B2) (4A1) (5B1) (6B1) (6B3) (9A1) (9B2) (12B2)
HWDRL (11B2) (9A2) (9B2) (11B3) (12B1)
HWDRL* (11B2) (9B2) (12A4) (13B1)
HWD RL (8A1) (5B1) (11B2) (12A3)
HWM (11B2) (8B1) (9A4) (9B3) (9B2) (11B3) (12A1) (12A2) (12A3)
HWMRL (11A2) (8A1) (9A2) (9A3) (9B2) (12B3) (12B4)
I04* (17B2) (3B1) (6A1) (8A4) (9A1) (9B3) (10A2)
I04B (17B3) (3B1) (3B1) (6A1) (6A1) (9A2) (8B1) (9B2) (9A4) (9B3) (12A2)
I4I5 (9A1) (4A1) (8A3) (11A1) (13B1) (13B2) (13B2)
I4SKP (17B3) (3A1) (7A2) (9B2) (9B3) (10A2) (10A4) (10B2)
I05* (17B4) (3B1) (6A1) (9A3) (10A2)
I1SE* (17B4) (9A1) (9B3) (13A1) (13B1)
I5B5KP (17B4) (3A1) (7B2) (9B2) (10A2) (10A4) (10B2)
I5X (17B4) (8A4) (8A4) (12B2) (13B2) (13B3) (13B3)
I06* (17B1) (3B1) (3B1) (3B2) (10A2)
I068 (17B2) (10A2) (11B3) (10A4) (10B4) (11A1) (11B3)
I07* (17B2) (3A1) (3B2) (13B2)
I07B (17B3) (10B3) (11A1) (11B3) (13B3)
I08* (17B4) (3A1) (3B2) (11A2)
I08B (17B4) (3A4) (9B2) (11A1)
I09* (17B1) (3A1) (3B2) (8A1) (8A2) (10A2) (10A2) (10B4) (11A2) (11A4)
I12* (17B2) (3A1) (3B2) (8A2) (8B1) (9A1) (10A4) (11A2) (11A4) (12B3)
I10B (17B3) (8A1) (8B1) (8B1) (10A2) (10B2) (11B3) (11B1)
I11* (17B4) (3A1) (3B2) (6B2) (10A4) (11A2) (12B3)
I11B (17B4) (9B3) (10A2) (10A3) (10B4) (12B3)
I11B* (17B4) (8A2) (12B3) (13B2)
I11N (17B4) (6B2) (9A1) (9A3) (11B1) (11B3) (13B2)
IND* (6A2) (5B1) [illegible]
INTFF (4B4) (4B4) (6A1) (8B3) (9B2) (12B1)
INTFF* (4B4) (8A2) (12A1) (12B1)
I/0* (7B1) (7B3) (5B3)
I/0CSC (7B1) (4A3) (4A4) (5B4) (6B3) (6B4)
I520SZ (7A2) (12A1) (12B2) (13B1)
J00 (14A4) (9B3) (9B3) (10A1) (13A1) (14B2)
J00B (10A2) (9B3) (10B2) (10B3) (14B1)
J01 (14A4) (10A1) (11B2) (13A1) (14B1) (14B2)
J02 (14A4) (10A1) (13A2) (14A1) (14B2)
J03 (14A4) (10A1) (13A2) (14A2) (14A1)
J04 (15A4) (10A1) (13A3) (14A3) (15B2)
J05 (15A4) (10A1) (15B1) (15B2) (13B3)
J06 (15A4) (10A1) (13A1) (15A1) (15A2)
J07 (15A4) (10A1) (13A1) (15A1) (15A2)
J09 (16A4) (10B1) (13A2) (16A1) (16B2)
J10 (16A4) (10B1) (13A3) (16A1) (16A2)
J11 (16A4) (10A1) (13A3) (16A1) (16A2)
JCOR (3A4) (9A1) (12A2) (12A3) (12A3)
JMPDLS (7B4) (13B1) (13B2) (13B4)
JPS* (7B2) (7A2) (9B2) (12A1) (12B1)
K00 (14A4) (10A1) (9A3) (9A3) (13A1) (13B1)
K00B (10A2) [illegible]
K00M (6B1) [illegible]
K01 (14A4) (10A1) (13A1) (14A1) (14B2)
K02 (14A4) (10A1) (13A2) (14A1) (14A2)
K03 (14A4) [illegible]
K04 [illegible]
K06 (15A4) (10B1) (13A1) (15A1) (15A2)
K07 (15A4) (10B1) (13A1) (15A1) (15A2)
K08 (16A4) (10B1) (13A2) (15A3) (16B1) (16B2)
K09 (16A4) (10B1) (13A2) (16B1) (16B2)
K10 (16A4) (10B1) (13A3) (16A1) (16A2)
K11 (16A4) (10B1) (13A3) (16A1) (16A2)
LDEXT (8A3) (14B1) (15B1) (16B1)
LDFPSW (6B3) (8A3) (14B1) (15B1) (16B1)
LDPR (6A2) [illegible]
LIT (7A1) (6A1) (14B1) (15B1)
LITB (7A1) (8A4) (9A1) (9A1) (15A1) (16B1)
M00B (17B2) (1A2) (14A1) (17A4)
M21B (17A2) (1A2) [illegible]
M22B (17A1) [illegible]
M04B (17B3) (1A2) (15B1) (17A4)
M05B (17A3) (1A2) (15B1) (17A4)
M06B (17A3) (1A2) (15A1) (17A4)
M07B (17A3) (1B3) (15A1) (17A4)
M08B (17B4) (1B2) (5B4) (16B1) (17A4)
M09B (17A4) (1B2) (5B4) (16B1) (17A4)
M10B (17A4) (1B1) (5B4) (16A1) (17B4)
M11B (17A4) (1A2) (5B4) (16A1) (17B4)
MPASS (13B1) (8A1) (8A1) (13B1) (13B2) (13B3)
MRJ* (9B2) (14A3) (15A3) (16A3)
MRK* (9B2) (14A3) (15A3) (16A3)
MXEN* (9A2) (14B2) (15B2) (16B2)
MXS0 (9B2) (14B2) (15B2) (16B2)
MXS1 (9A2) (14B2) (15B2) (16B2)
MAS2 (7B2) (14A2) (15B2) (16B2)
ONCE* (8B3) (9B2) (12A1) (13B2)
OP1X (11A2) (8A1) (8B1) (12A2) (13B2)
OP2 (7A3) (3A1) [illegible]
OP2CL (9B2) (9B2) (10B2) (11B3)
OP100 (11B1) (8A2) (8B1) (8B1) (9A2) (9A2) (9A3) (9B3) (11B1) (12A2)
OP1023 (11A1) (9A2) (9A2) (11A2) (12B2)
OP167 (11A1) (9B3) (9B3) (9B3)
OSCPUL (19B4) (4B1) (4A3) (4A4) (5A1) (5B2) (5B2)
OUTST (6B3) (14B4) (15B4) (16B4)
OV (11B4) (1B1) (9A1) (9A2) (9B2) (12A2) (12B1) (14B2)
OV* (11B4) (5B1) (8B1) (9B2) (10A2)
PE3* (9B1) (14B3) (15B3) (16B3)
PEJ* (9A3) (14A3) (15A3) (16A3)
PEK* (9A3) (14A3) (15A3) (16A3)
PEP* (9B3) (9B1) (14B3) (15B3) (16B3)
PER* (9A4) (9B3) (14B4) (15A4) (16A4)
PES* (9A4) (9A1) (14A4) (15A4) (16A4)
PS12 (11A4) (9A2) (9B3) (12A2) (12B3) (12B4)
PS12* (11A4) (5B1) (9A3) (9B2) (12A3) (12B3) (12B3)
PU0 (5A2) (5A3) (5A4) (5B2)
PU0* (5A2) (3A4) (7A4) (8B2)
PU0B (5A2) (5B1) (6B4) (8A1) (8A3) (8A4) (9B1) (12A1)
PU1B (5A2) (9B2) (12B1) (10B1)
PU3B (5A2) (8A3) (8A4) (8B3) (12B2)
PU4 (5A2) (5A3) (5A4) (5B4)
PU4B (5A2) (8A4) (12B1) (12B2)
PU5 (5B2) (5A3) (5A4) (5B4)
PU5B (5B2) (7A3) (8B3) (9A2) (12A2) (12B3)
PU6 (5B2) (4A1) (4A3) (5A4) (5B3) (5B4)
PU6B (5B2) (3A2) (3A3) (8A1) (8A4) (9B2) (12B1)
PU7 (5B2) (5B1) (5B3) (5B4)
PU7B (5B2) (3A4) (3B3) (4A3) (4B2) (6B4)
PULLAD (19B4) (14B3) (15B3) (16B3)
PULSKP (19B4) (3A1) (3A1) (10B2) (10B3)
PULLU (19B4) (8B1) (14A4) (14B1) (15A4) (15B1) (16B4) (16B1) (8B1)
PWRDY* (19A4) (3A4) (3B1)
REGCLK (4A4) (3B3) (6A1) (12B3) (7A3) (9A4) (9B1) (11B3)
RLOOP (8B2) (9B3) (11A2) (11B1) (12B1) (12B4)
ALOOP* (8B2) (8A1) (8A1) (8B2) (9A4) (9B2)
STB (7A1) (12A1) (12A3) (12A4) (13B3)
STCLR (3B3) (3A1) (4A3) (6B4) (10B2)
STCLR* (3B3) (5A1) (5B2) (6A2) (11B3) (11B4) (11B2)
STDN7* (3B3) (3B3) (6A2) (6B1)
TH (7A1) (3A4) (3B2) (3B2)
THFF (3B4) (6A4) (8A1) (9B2) (9B3) (12B1)
THFF* (3B4) (3B3) (6A3) (8A1) (8B3) (13B3)
WAIT* (8B2) (8B1) (8B2) (12A3)
WTRL* (8B2) (8B3) (9B3) (12A1)
XCT* (7B1) (5B1) (7A2) (8A1) (8B2)
KEY SW GND (19B1) (2A2) (2A2) (2A3) (2A3) (2A4) (2B4)

NOTES.

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2 - ALL RESISTORS ARE 1/4W, ±5%, EXCEPT AS NOTED.
3 - ALL CAPACITORS ARE pf, EXCEPT AS NOTED.
4 - I.C. VOLTAGES, EXCEPT AS NOTED:
14 PIN DIP, PIN (7) GND: PIN (14) +5V
16 PIN DIP, PIN (8) GND: PIN (16) +5V
24 PIN DIP, PIN (12) GND: PIN (24) +5V

5 - THE FOLLOWING SYMBOLS/NOTATIONS ARE USED ON THE DIAGRAM AND/OR PRINTED CIRCUIT BOARD ASSEMBLY.

IC - INTEGRATED CIRCUIT
Q - TRANSISTOR
( ) - IC PIN DESIGNATION
→ - CONNECTOR DESIGNATION
NC - NO CONNECTION
SAT - SELECT AT TEST
(P1) - PRECISION RESISTORS 100PPM 1/8W, ±1% METAL FILM
DC COMMON
F8 - FERRITE BEAD
GERMANIUM DIODE
SILICON DIODE
ZENER DIODE
TUNNEL DIODE
SELENIUM DIODE

ADC* — SIGNAL NAME
(4A2) — SIGNAL SOURCE DRAWING LOCATION, OR
(4A3) — SIGNAL LOAD DRAWING LOCATION
ZONE LOCATION
SHEET NUMBER

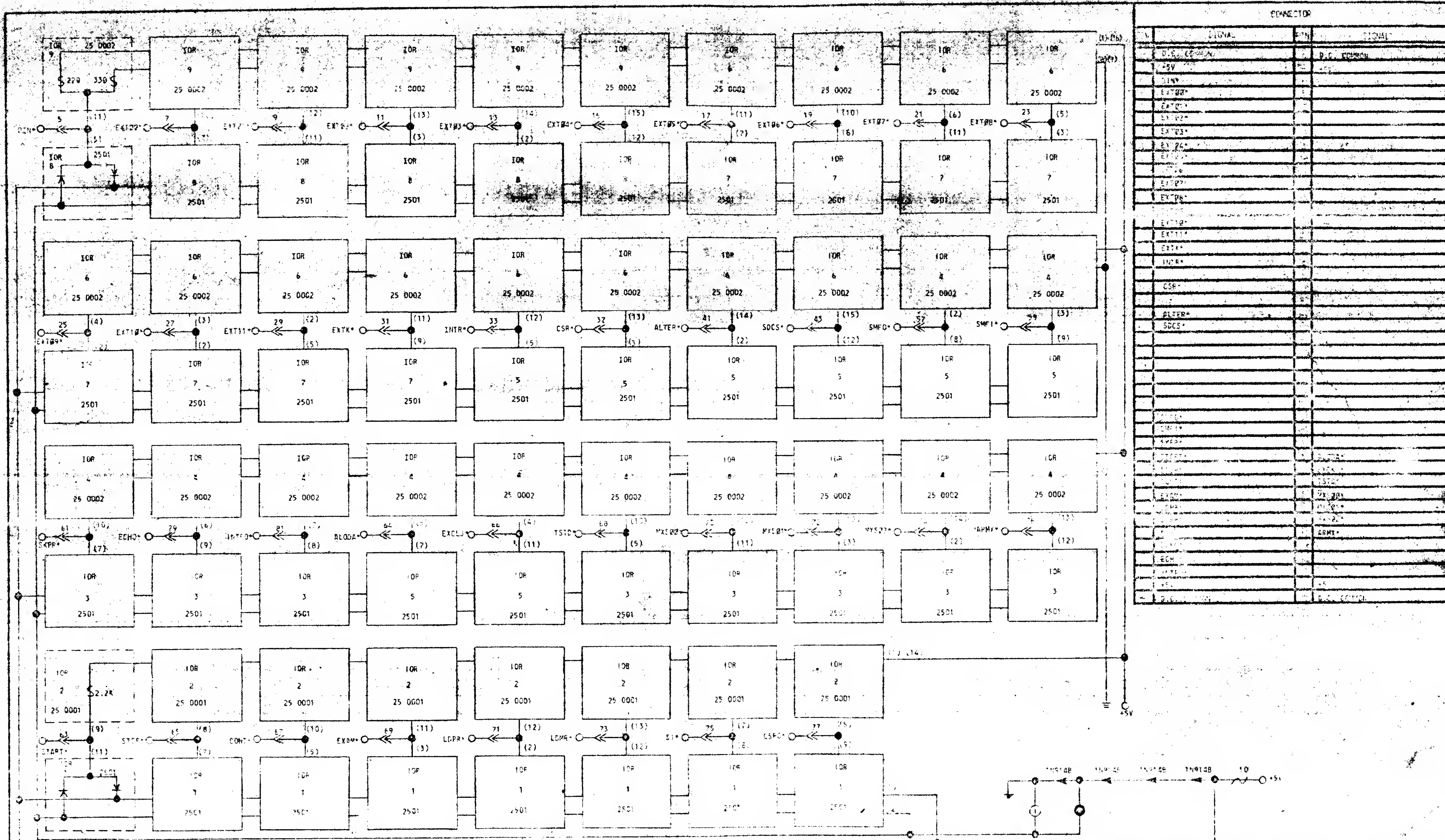
CONNECTOR PIN, CONNECTOR, P.C. BOARD NAME, I.C. PIN, I.C. LOCATION ON P.C. BD., I.C. TYPE

CONNECTOR, CONNECTOR PIN, I.C. PIN, P.C. BOARD NAME, S27-23, S26-01, XXX, C07, 946, I.C. LOCATION ON P.C. BD., I.C. TYPE

NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067

ND 812
LONG BUSSES

DRAWN BY: | CHECKED BY: | SHEET 23 OF [illegible]



NOTES:

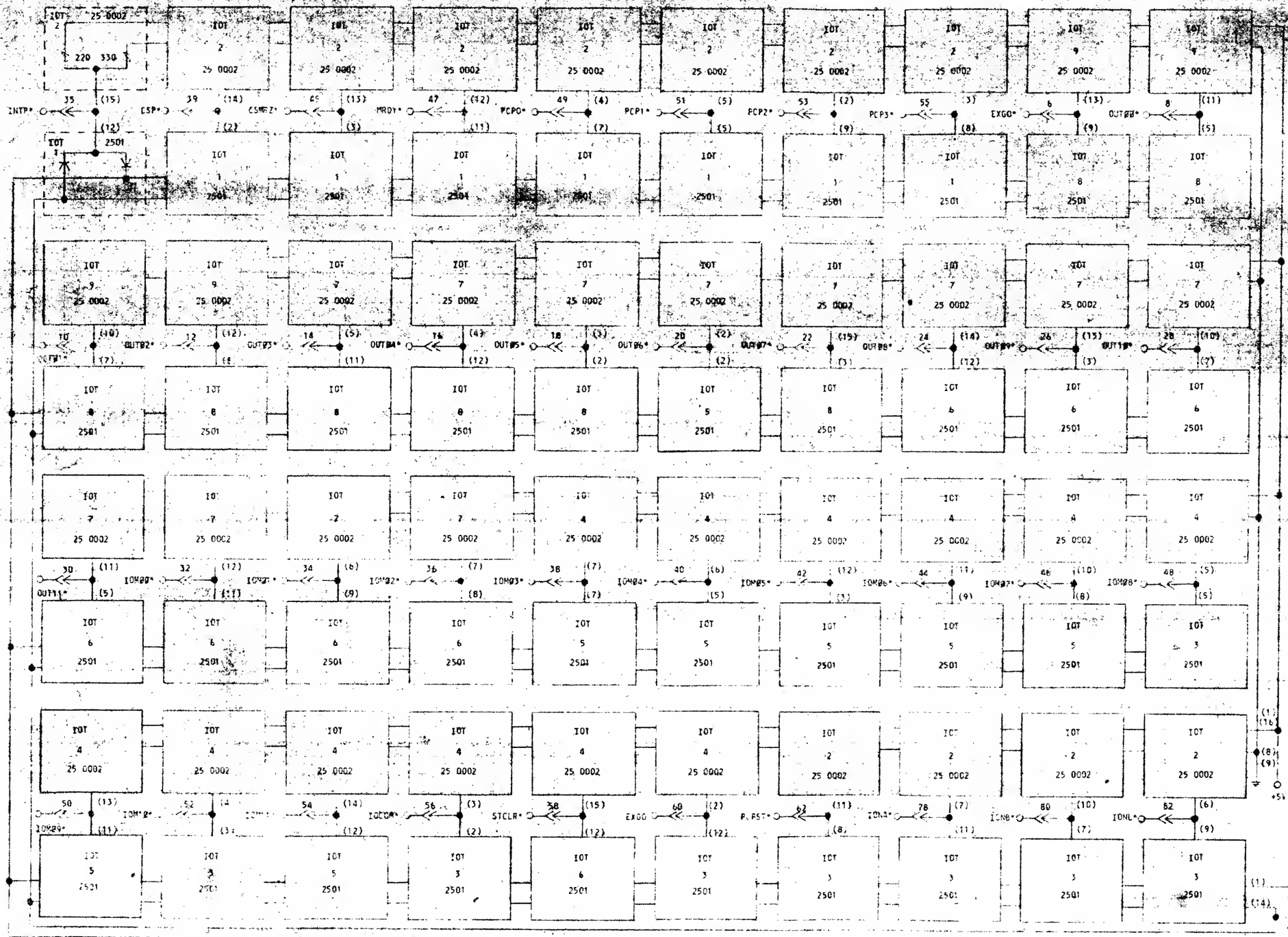
5 - THE FOLLOWING SYMBOLS/NOTATION ARE USED ON THE DIAGRAM AND OR PRINTED CIRCUIT BOARD ASSEMBLY.

NUCLEAR DATA INC

SYSTEM DIAGRAM
ND-812

SHEET 24 OF 28

USED ON



PIN	SIGNAL	PIN	SIGNAL
1	D.C. COMMON	2	D.C. COMMON
3	+5V	4	+5V
4		6	EXGO*
7		8	OUT02*
9		10	OUT01*
11		12	OUT00*
13		14	OUT01*
15		16	OUT02*
17		18	OUT05*
19		20	OUT06*
21		22	OUT07*
23		24	OUT08*
25		26	OUT09*
27		28	OUT10*
29		30	OUT11*
31		32	IOM00*
33		34	IOM01*
35	INTP*	36	IOM02*
37		38	IOM03*
39	CSP*	40	IOM04*
41		42	IOM05*
43		44	IOM06*
45	IOMEZ*	46	IOM07*
47	MRDY*	48	IOM08*
49	PCP0*	50	IOM09*
51	PCP1*	52	IOM10*
53	PCP2*	54	IOM11*
55	PCP3*	56	IGCOM*
57		58	STCLR*
59		60	EXGO
61		62	P.RST*
63		64	
65		66	
67		68	
69		70	
71		72	
73		74	
75		76	
77		78	IONA*
79		80	IONB*
81		82	IONL*
83		84	+5V
85	D.C. COMMON	86	D.C. COMMON

NOTES:

1 - ALL DIODES ARE 1N68 OR EQUIVALENT, EXCEPT AS NOTED.
2 - ALL RESISTORS ARE 1/4W, 5%, EXCEPT AS NOTED.
3 - ALL CAPACITORS ARE 0V, EXCEPT AS NOTED.
4 - REFER TO ND SPEC. 100-0060 FOR I.C. CROSS REFERENCE INFORMATION.

5 - THE FOLLOWING SYMBOLS/NOTATIONS ARE USED ON THE DIAGRAM AND/OR PRINTED CIRCUIT BOARD ASSEMBLY.

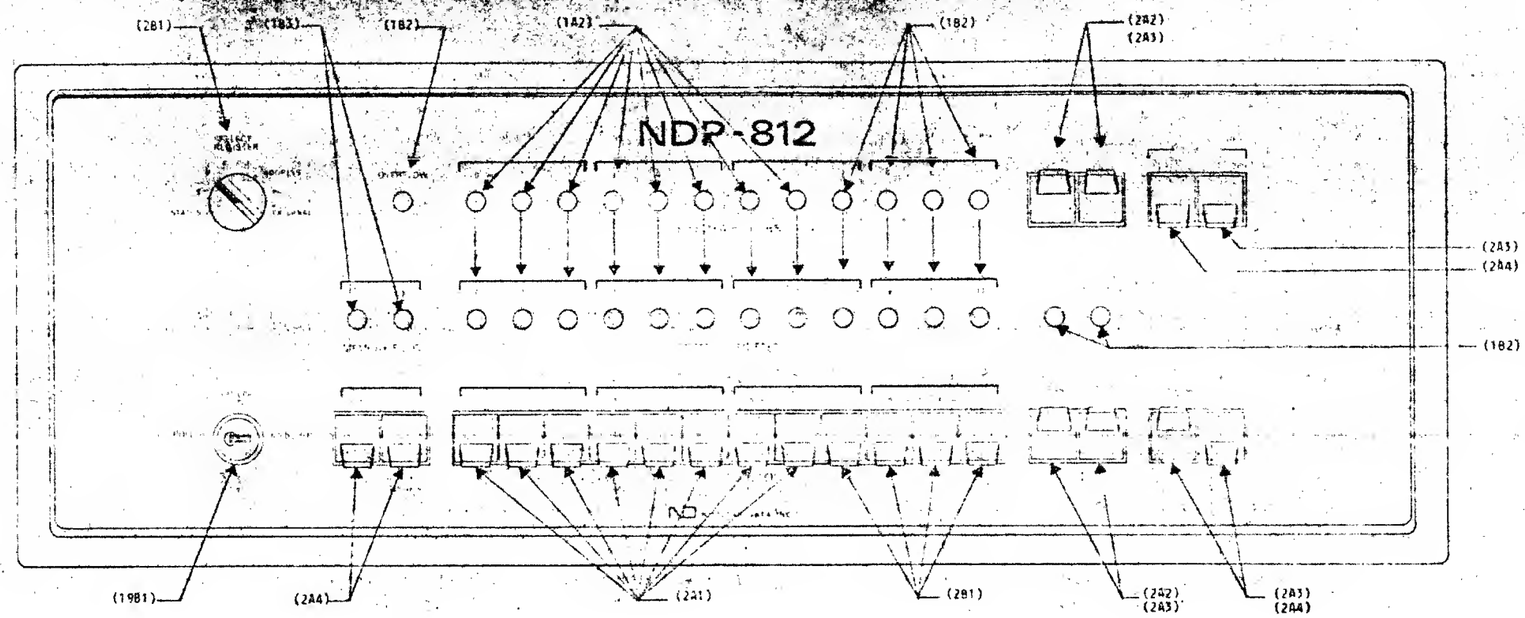
IC - INTEGRATED CIRCUIT
Q - TRANSISTOR
NC - NO CONNECTION
□ - CONNECTOR PIN DESIGNATION
( ) - IC PIN DESIGNATION
SAT - SELECT AT TEST
(P1) - PRECISION RESISTORS 1/8W, ±1% METAL FILM
- SELENIUM DIODE
- SILICON DIODE
- GERMANIUM DIODE
- ZENER DIODE
- TUNNEL DIODE
- DC COMMON

NUCLEAR DATA INC

SYSTEM DIAGRAM
ND-812

ND-2011-A (70-1813)

SHEET 25 OF 28



NOTES:

1 - [illegible] NOTES ARE 0964 OR EQUIVALENT, EXCEPT AS NOTED.

2 - ALL RESISTORS ARE 1/4W, ±5%, EXCEPT AS NOTED.

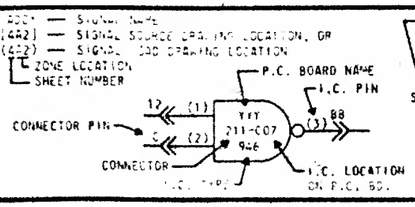
3 - ALL CAPACITORS ARE pf, EXCEPT AS NOTED.

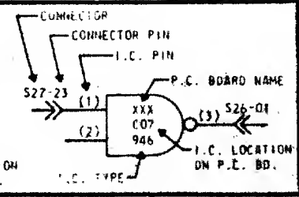
4 - I.C. VOLTAGES, EXCEPT AS NOTED:
- 14 PIN DIP, PIN (7) GND; PIN (14) +5V
- 16 PIN DIP, PIN (8) GND; PIN (16) +5V
- 24 PIN DIP, PIN (12) GND; PIN (24) +5V

5 - THE FOLLOWING SYMBOLS/NOTATIONS ARE USED ON THE DIAGRAM AND/OR PRINTED CIRCUIT BOARD ASSEMBLY.

- IC - INTEGRATED CIRCUIT
- Q - TRANSISTOR
- ( ) - IC PIN DESIGNATION
- - CONNECTOR DESIGNATION
- NC - NO CONNECTION
- SAT - SELECT AT TEST
- (P1) - PRECISION RESISTORS 100PPM 1/8W, ±1% METAL FILM
- - DC COMMON
- FB - FERRITE BEAD
- - GERMANIUM DIODE
- - SILICON DIODE
- - ZENER DIODE
- - TUNNEL DIODE
- - SELENIUM DIODE

[illegible] — SIGNAL NAME
(2A2) — SIGNAL SOURCE DRAWING LOCATION, OR
(4A2) — SIGNAL USE DRAWING LOCATION
ZONE LOCATION
SHEET NUMBER

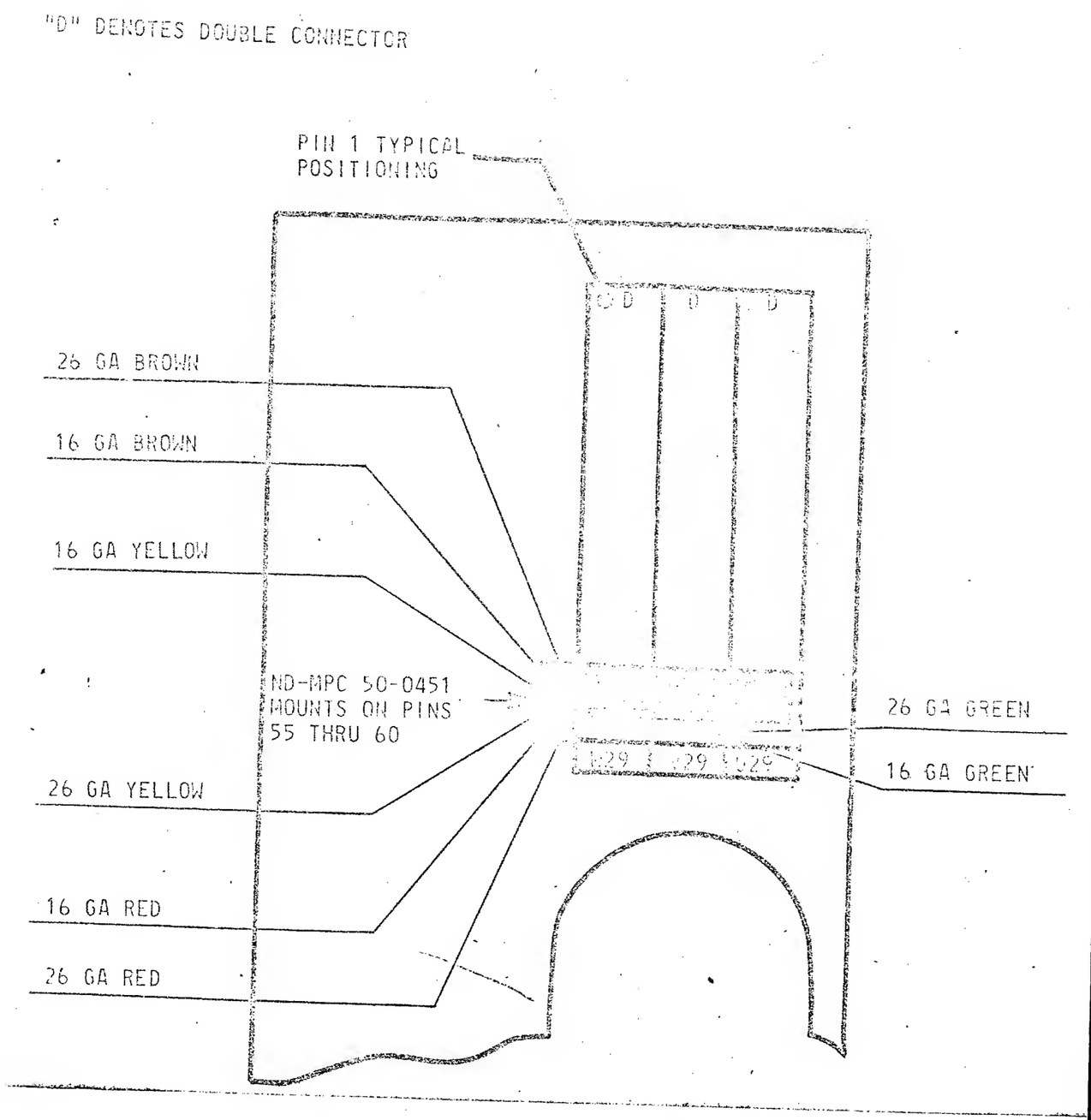




NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067

ND-812
FRONT PANEL RENDERING

DRAWN BY: D W D	CHECKED BY: S V W	SHEET 26 OF 28
DATE DRAWN 10 20 70	APPROVED BY P I	[illegible] 01



L88-0397-01 (SH 27)

Figure 7-2. ND812, Bussing Diagram (Sheet 27 0f 28)

1 - "D" DENOTES DOUBLE CONNECTION.

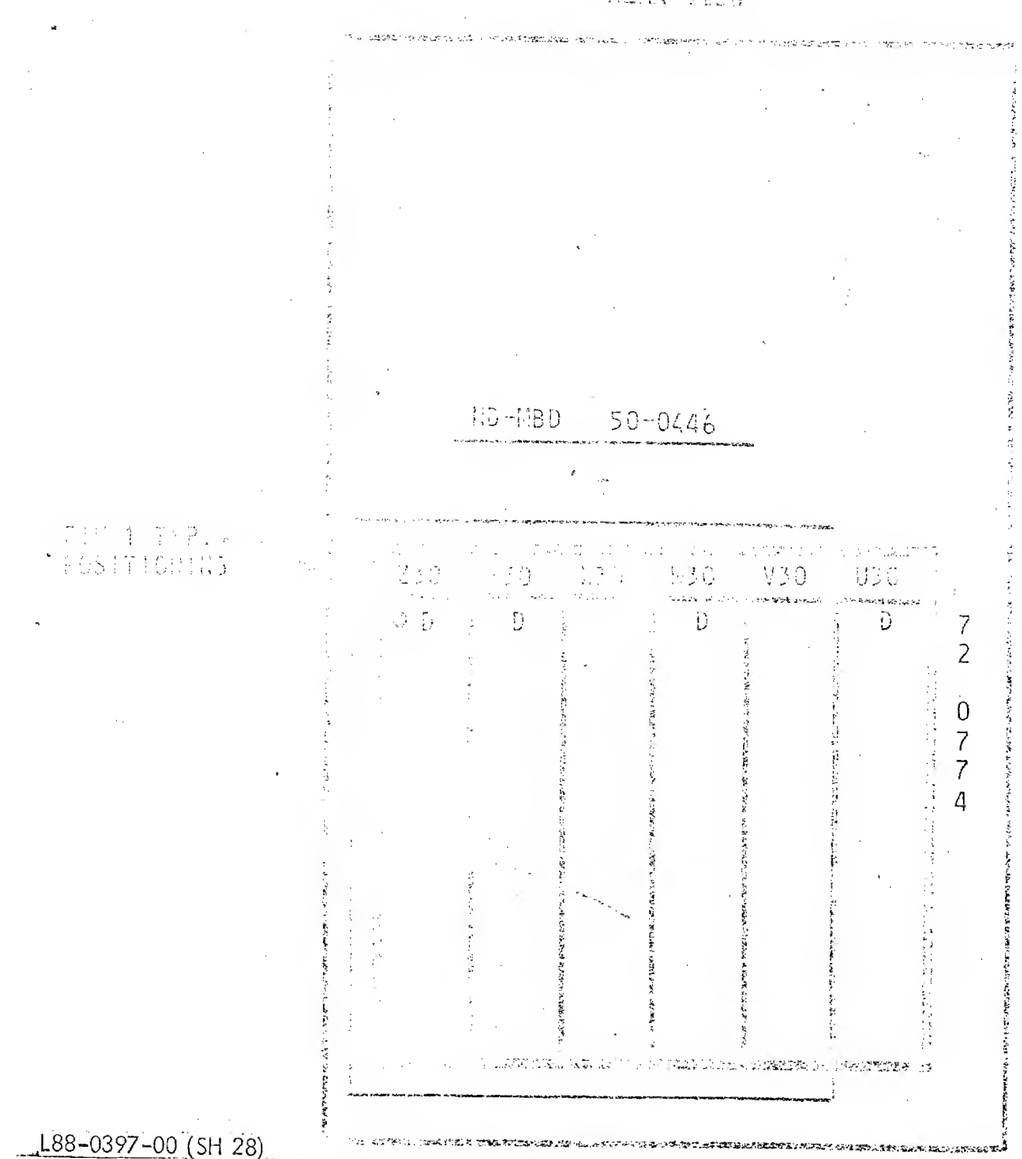
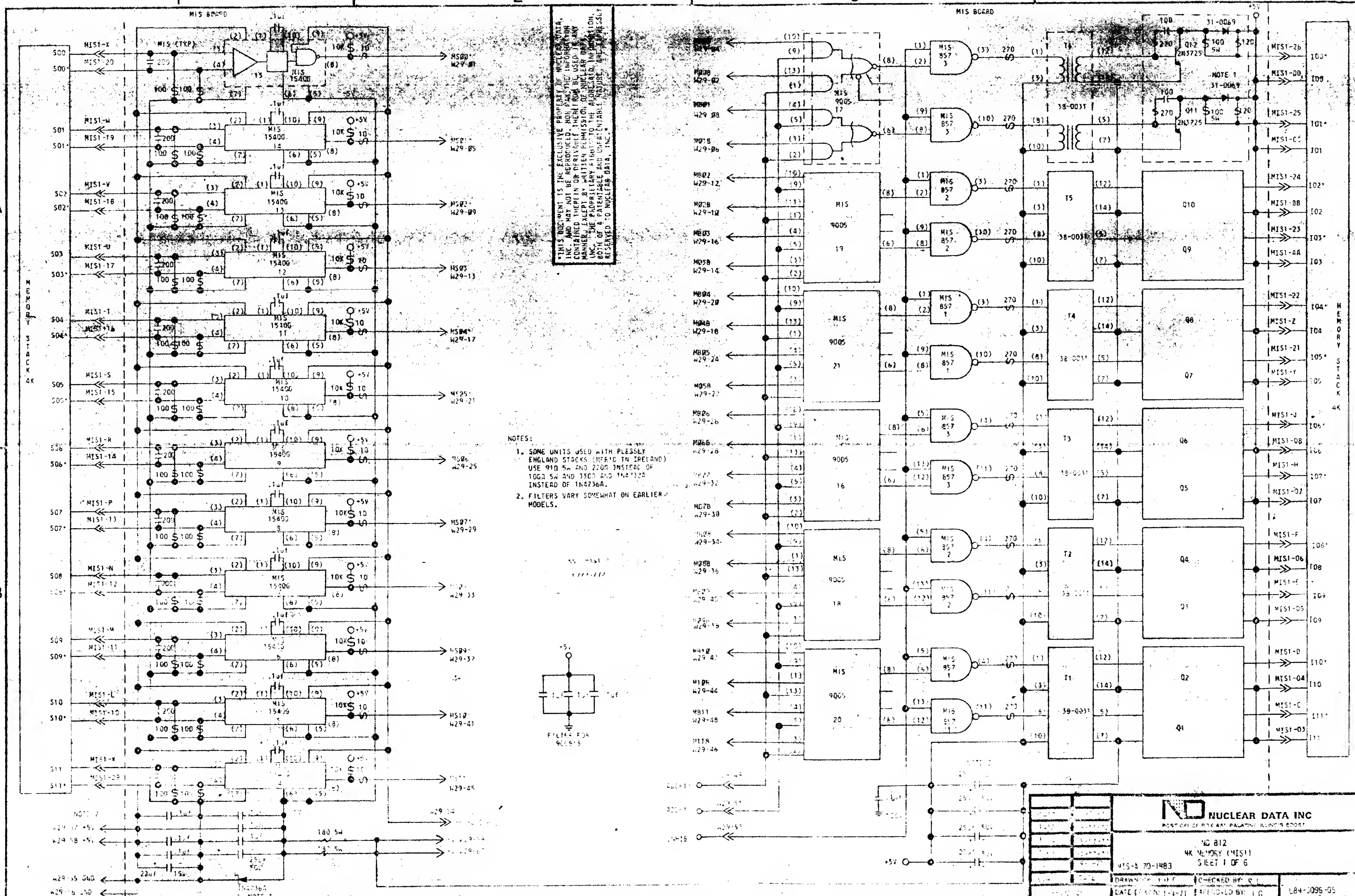


Figure 7-2. ND812, Bussing Diagram (Sheet 28 of 28)



NOTES:

1. SOME UNITS USED WITH PLESSEY ENGLAND STACKS (MFR'D IN IRELAND) USE 910Ω 5W AND 220Ω INSTEAD OF 100Ω 5W AND 330Ω AND 1N4732A INSTEAD OF 1N4736A.
2. FILTERS VARY SOMEWHAT ON EARLIER MODELS.

NUCLEAR DATA INC

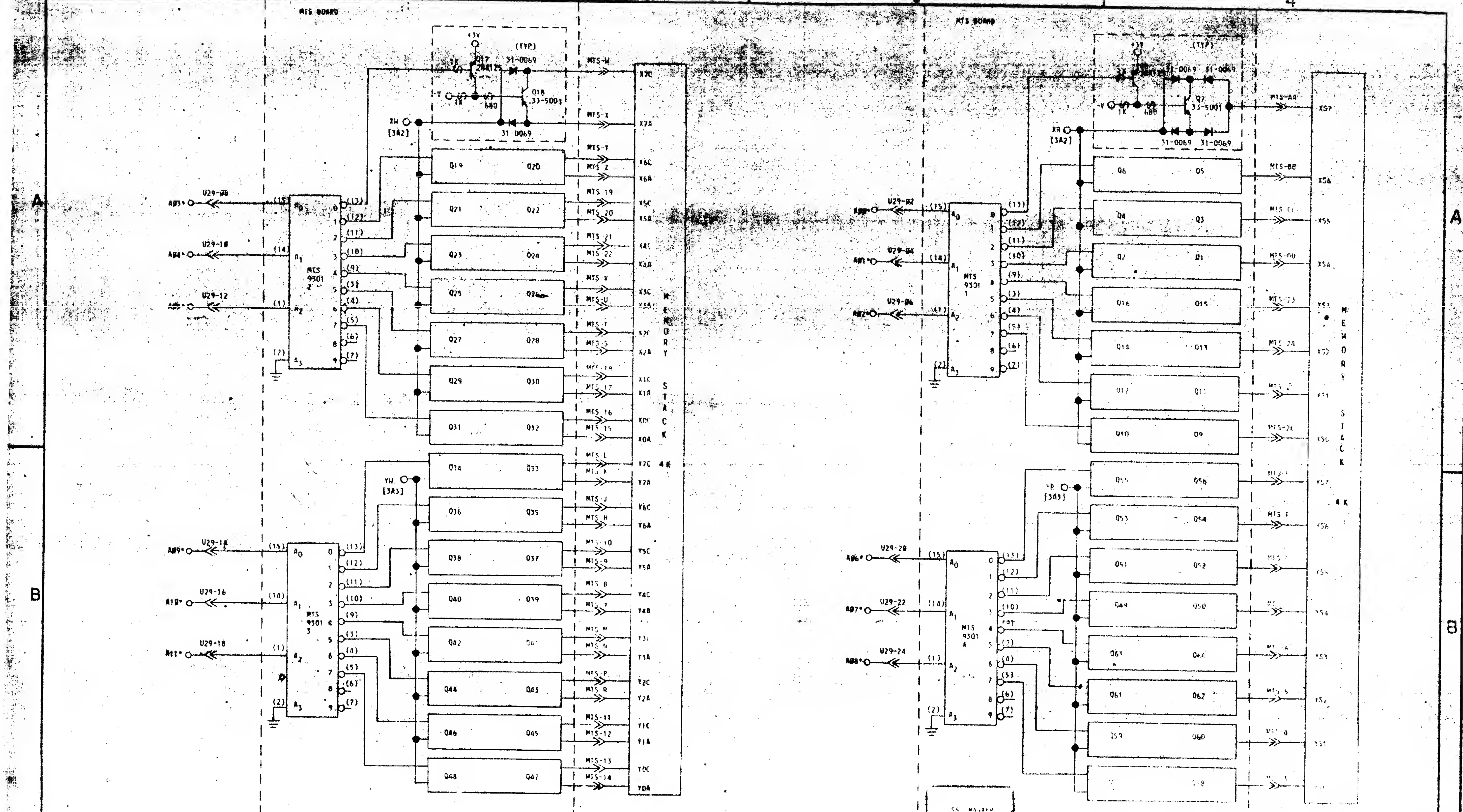
ND 812
4K MEMORY (MIS1)
SHEET 1 OF 6

MIS-A 70-1483

DRAWN BY:
CHECKED BY:
DATE:
APPROVED BY:

L84-0096-05

PENDING ECN



SS MASTER

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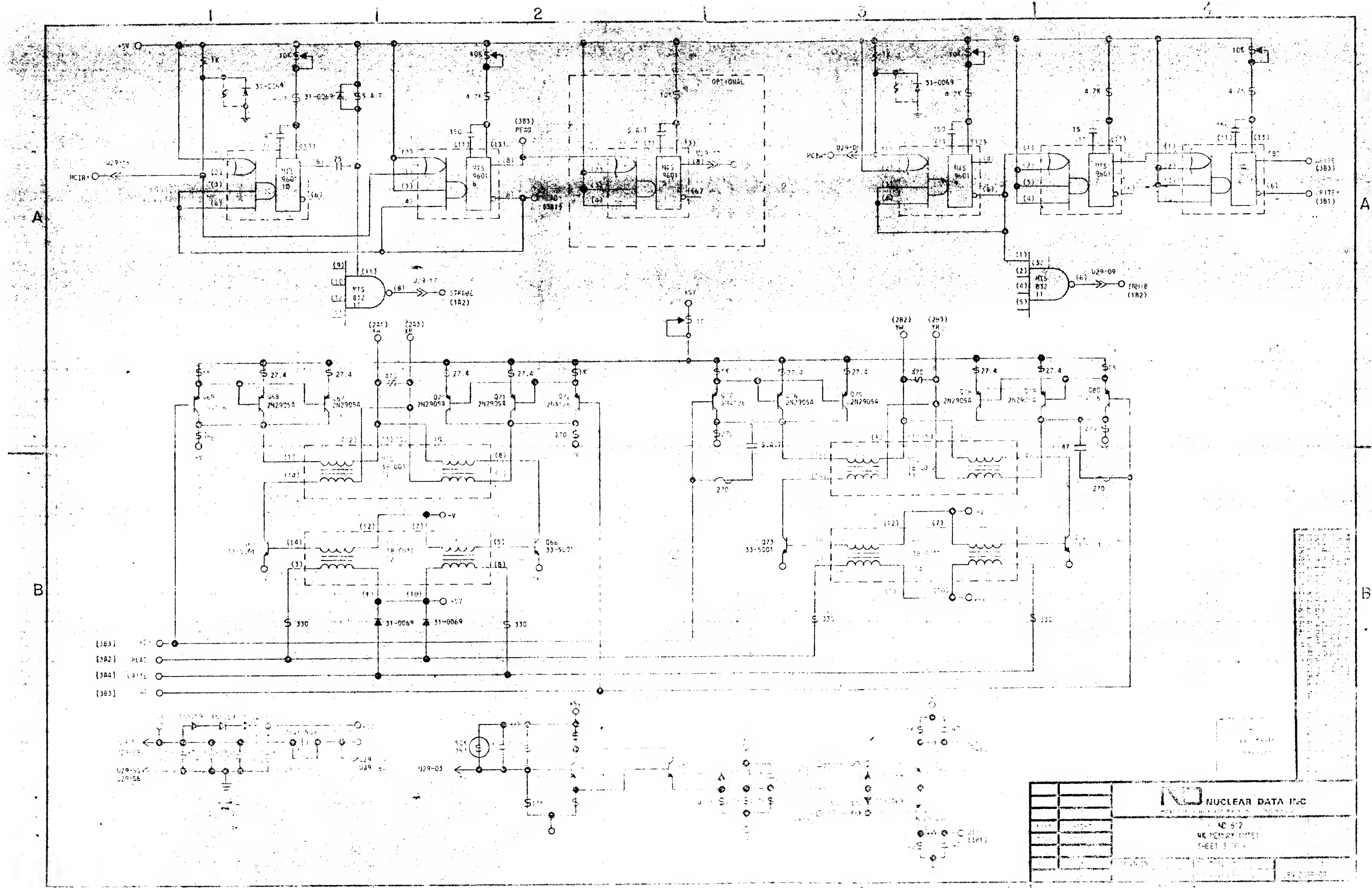
1352	6-7-72

NUCLEAR DATA INC

ND 812
4K MEMORY (MTS)
SHEET 2 OF 6

DRAWN BY: | CHECKED BY: | LBH-000
DATE DRAWN: | APPROVED BY:


+5V
1K
10K
31-0069
S.A.T.
4.7K
MCIR*
MTS 9601
MTS 832
STROBE (1A2)
READ
OPTIONAL
MCIW*
WRITE (3B3)
WRITE* (3B1)
INHIB (1B2)
U29-09
2N2905A
27.4
470
33-5001
330
(3B3)
(3A2) READ
(3A4) WRITE
(3B3)
NUCLEAR DATA INC
ND 812
SHEET 3

1 2 3 4

A

MTS CONNECTOR U29			
PIN	SIGNAL	PIN	SIGNAL
1		2	AØØ* (2B?)
3	TH- (3B2)	4	AØ1* ([illegible]3)
5	MCI-W* (3A3)	6	AØ2* (2A3)
7		8	AØ3* (2A1)
9	INHIB [3A4](1B3)	10	AØ4* (2A1)
11		12	AØ5* (2A1)
13	WID (3A3)	14	AØ9* (2B1)
15	MCIR* (3A3)	16	A1Ø* (2B1)
17	STROBE [3A2](1B2)	18	A11* (2B1)
19		20	AØ6* (2B3)
21		22	AØ7* (2B3)
23		24	AØ8* (2B3)
25		26	
27		28	
29		30	
31		32	
33		34	
35		36	
37		38	
39		40	
41		42	
43		44	
45		46	
47		48	
49		50	
51		52	
53		54	
55	D.C. COM. (3B1)	56	D.C. COM. (3B1)
57	+5 (3B1)	58	+5 (3B1)
59	[illegible]	60	-V [illegible]

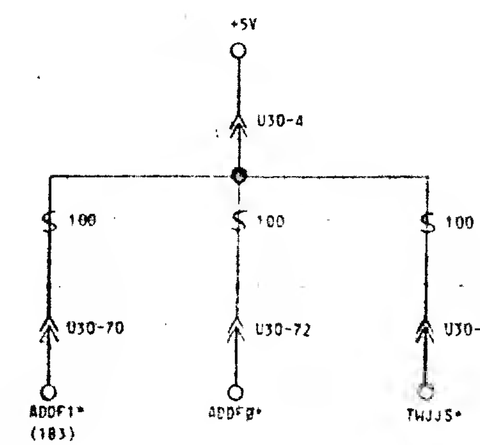
MIS CONNECTOR W29			
PIN	SIGNAL	PIN	SIGNAL
1	MSØØ* [1A2]	2	MØØB (1A3)
3		4	MBØØ (1A3)
5	MSØ1* [1A2]	6	MØ1B (1A3)
7		8	MBØ1 (1A3)
9	MSØ2* [1A2]	10	MØ2B (1A3)
11		12	MBØ2 (1A3)
13	MSØ3* [1A2]	14	MØ3B (1A3)
15		16	MBØ3 (1A3)
17	MSØ4* [1A2]	18	MØ4B (1A3)
19		20	MBØ4 (1A3)
21	MSØ5* [1A2]	22	MØ5B (1A3)
23		24	MBØ5 (1A3)
25	MSØ6* [1A2]	26	MBØ6 (1A3)
27		28	MØ6B (1A3)
29	MSØ7* [1B2]	30	MØ7B (1B3)
31		32	MBØ7 (1B3)
33	MSØ8* [1B2]	34	MBØ8 (1B3)
35		36	MØ8B (1B3)
37	MSØ9* [1B2]	38	MØ9B (1B3)
39		40	MBØ9 (1B3)
41	MS1Ø* [1B2]	42	MB1Ø (1B3)
43		44	M1ØB (1B3)
45	MS11* [1B2]	46	M11B (1B3)
47		48	MB11 (1B3)
49	ADDF1* (1B3)	50	
51	ADDF1 (1B3)	52	
53	INHIB (1B3)[3A4]	54	STROBE (1B2)[3A2]
55	GND (1B1)	56	GND (1B1)
57	+5 (1B1)	58	+5 (1B1)
59	-V [illegible]	60	-V (1B[illegible])

MTS CONNECTOR TO STACK			
PIN	SIGNAL	PIN	SIGNAL
1		A	
2		B	
3	YSØ [2B4]	C	YS4 [2B4]
4	YS1 [2B4]	D	YS5 [2B4]
5	YS2 [2B4]	E	YS6 [2B4]
6	YS3 [2B4]	F	YS7 [2B4]
7	Y4A [2B2]	H	Y6A [2B2]
8	Y4C [2B2]	J	Y6C [2B2]
9	Y5A [2B2]	K	Y7A [2B2]
10	Y5C [2B2]	L	Y7C [2B2]
11	Y1C [2B2]	M	Y3C [2B2]
12	Y1A [2B2]	N	Y3A [2B2]
13	YØC [2B2]	P	Y2C [2B2]
14	YØA [2B2]	R	Y2A [2B2]
15	XØA [2A2]	S	X2A [2A2]
16	XØC [2A2]	T	X2C [2A2]
17	X1A [2A2]	U	X3A [2A2]
18	X1C [2A2]	V	X3C [2A2]
19	X5C [2A2]	W	X7C [2A2]
20	X5A [2A2]	X	X7A [2A2]
21	X4C [2A2]	Y	X6C [2A2]
22	X4A [2A2]	Z	X6A [2A2]
23	XS3 [2A4]	AA	XS7 [2A4]
24	XS2 [2A4]	BB	XS6 [2A4]
25	XS1 [2A4]	CC	XS5 [2A4]
26	XSØ [2A4]	DD	XS4 [2A4]
27		EE	
28		FF	

MIS Y CONNECTOR TO STACK			
PIN	SIGNAL	PIN	SIGNAL
1		A	
2		B	
3	I11 [1B4]	C	I11* [1B4]
4	I1Ø [1B4]	D	I1Ø* [1B4]
5	IØ9 [1B4]	E	IØ9* [1B4]
6	IØ8 [1B4]	F	IØ8* [1B4]
7	IØ7 [1B4]	H	IØ7* [1B4]
8	IØ6 [1A4]	J	IØ6* [1A4]
9	S11* [1B1]	K	S11 [1B1]
10	S1Ø* [1B1]	L	S1Ø [1B1]
11	SØ9* [1B1]	M	SØ9 [1B1]
12	SØ8* [1B1]	N	SØ8 [1B1]
13	SØ7* [1B1]	P	SØ7 [1B1]
14	SØ6* [1B1]	R	SØ6 [1B1]
15	SØ5* [1A1]	S	SØ5 [1A1]
16	SØ4* [1A1]	T	SØ4 [1A1]
17	SØ3* [1A1]	U	SØ3 [1A1]
18	SØ2* [1A1]	V	SØ2 [1A1]
19	SØ1* [1A1]	W	SØ1 [1A1]
20	SØØ* [1A1]	X	SØØ [1A1]
21	IØ5* [1A4]	Y	IØ5 [1A4]
22	IØ4* [1A4]	Z	IØ4 [1A4]
23	IØ3* [1A4]	AA	IØ3 [1A4]
24	IØ2* [1A4]	BB	IØ2 [1A4]
25	IØ1* [1A4]	CC	IØ1 [1A4]
26	IØØ* [1A4]	DD	IØØ [1A4]
27		EE	
28		FF	

B

TCC CABLE CONNECTOR U30			
PIN	SIGNAL	PIN	SIGNAL
1	GND	2	GND
3	+5V	4	+5V (4B3)
67	GND	66	GND
69	GND	68	GND
83	+5V	70	ADDF1* (4B3)
85	GND	72	ADDFØ* (4B3)
		82	THJJS* (4B3)
		84	+5V
		86	GND



NOTES:

1 - ALL DIODES ARE D964 OR EQUIVALENT, EXCEPT AS NOTED.
2 - ALL RESISTORS ARE 1/4W, ±5%, EXCEPT AS NOTED.
3 - ALL CAPACITORS ARE pf, EXCEPT AS NOTED.
4 - I.C. VOLTAGES, EXCEPT AS NOTED:
14 PIN DIP, PIN (7) GND: PIN (14) +5V.
16 PIN DIP, PIN (8) GND: PIN (16) +5V
24 PIN DIP, PIN (12) GND: PIN (24) +5.

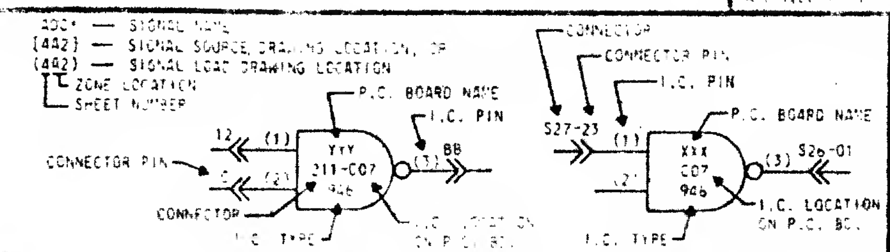
5 - THE FOLLOWING SYMBOLS/NOTATIONS ARE USED ON THE DIAGRAM AND/OR PRINTED CIRCUIT BOARD ASSEMBLY

IC - INTEGRATED CIRCUIT
Q - TRANSISTOR
( ) - IC PIN DESIGNATION
→ - CONNECTOR DESIGNATION
NC - NO CONNECTION

SAT - SELECT AT TEST
(P1) - PRECISION RESISTORS 100PPM 1/8W, ±1% METAL FILM
DC COMMON
FB - FERRITE BEAD

GERMANIUM DIODE
SILICON DIODE
ZENER DIODE
TUNNEL DIODE
SELENIUM DIODE

ADD* — SIGNAL NAME
[4A2] — SIGNAL SOURCE DRAWING LOCATION, OR
(4A2) — SIGNAL LOAD DRAWING LOCATION
ZONE LOCATION
SHEET NUMBER



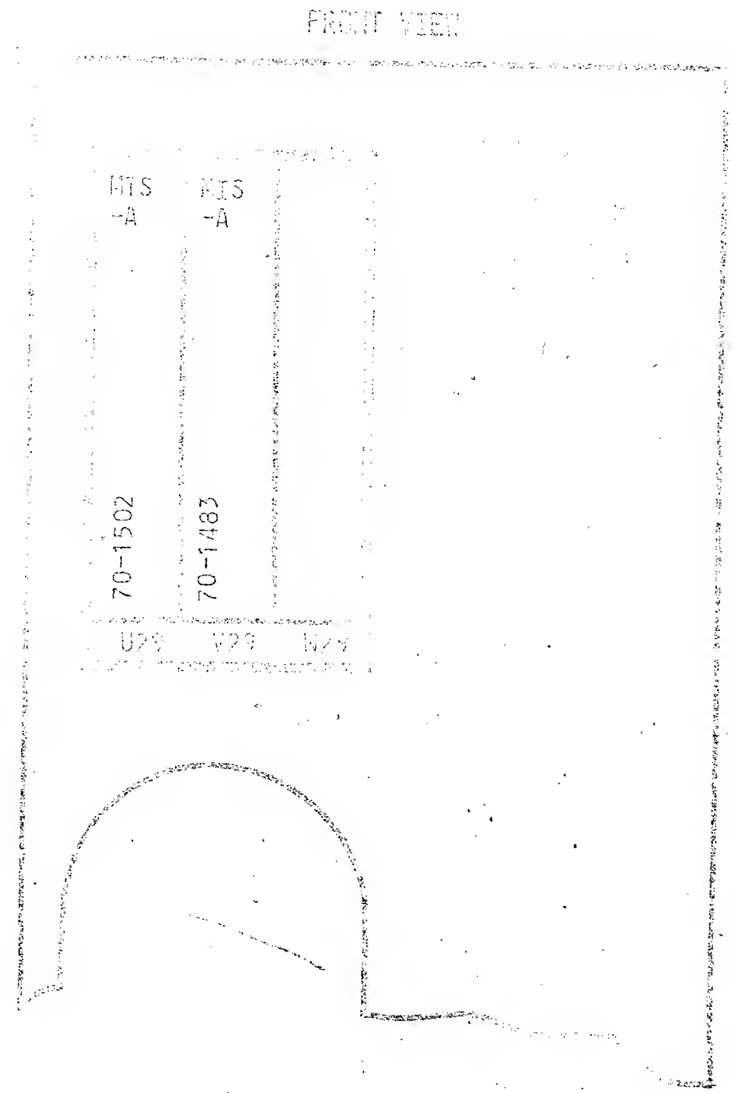
1268	[illegible]
REVISION	

NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067

ND-812
4K MEMORY CONNECTORS

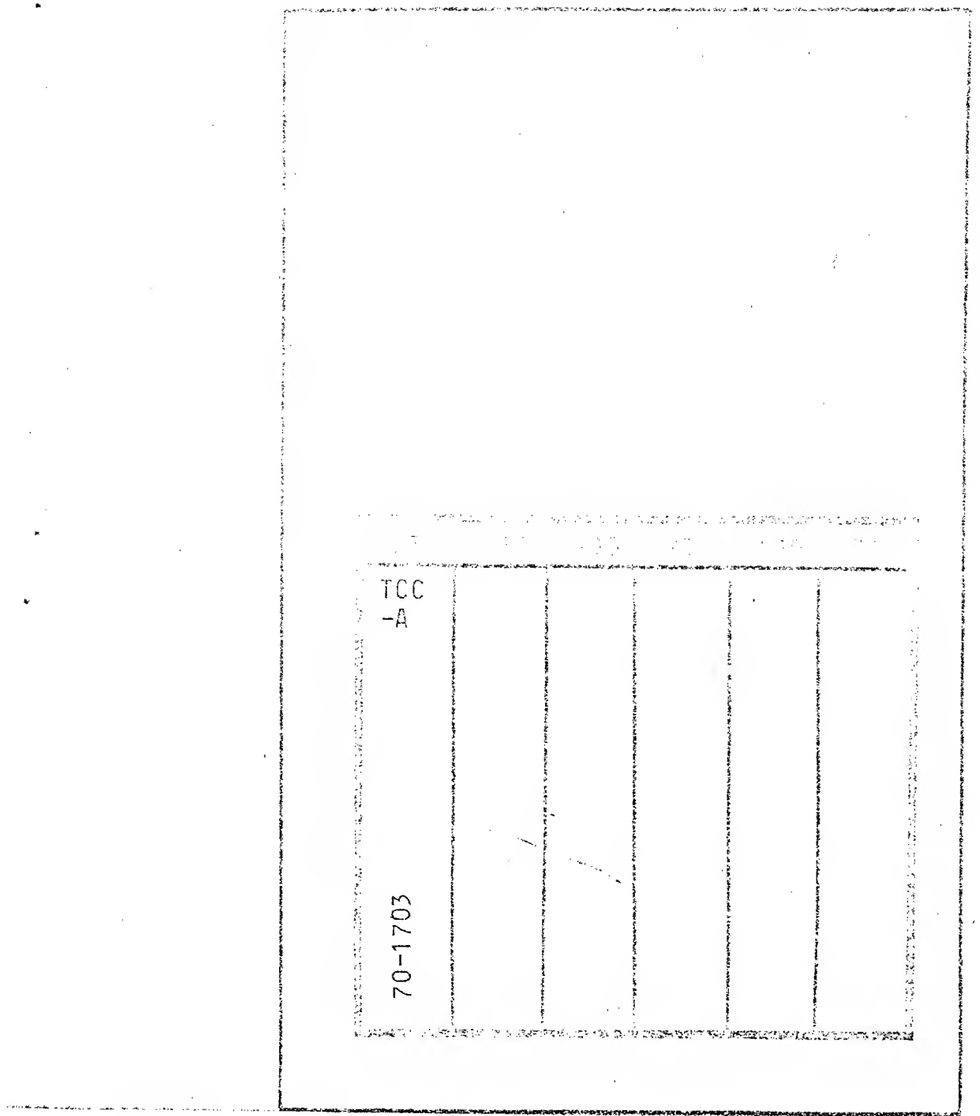
DRAWN BY: [illegible]	CHECKED BY: [illegible]	SHEET 4 OF [illegible]
DATE DRAWN: 1-4-71	APPROVED BY: RL	[illegible]

1 2 3 4



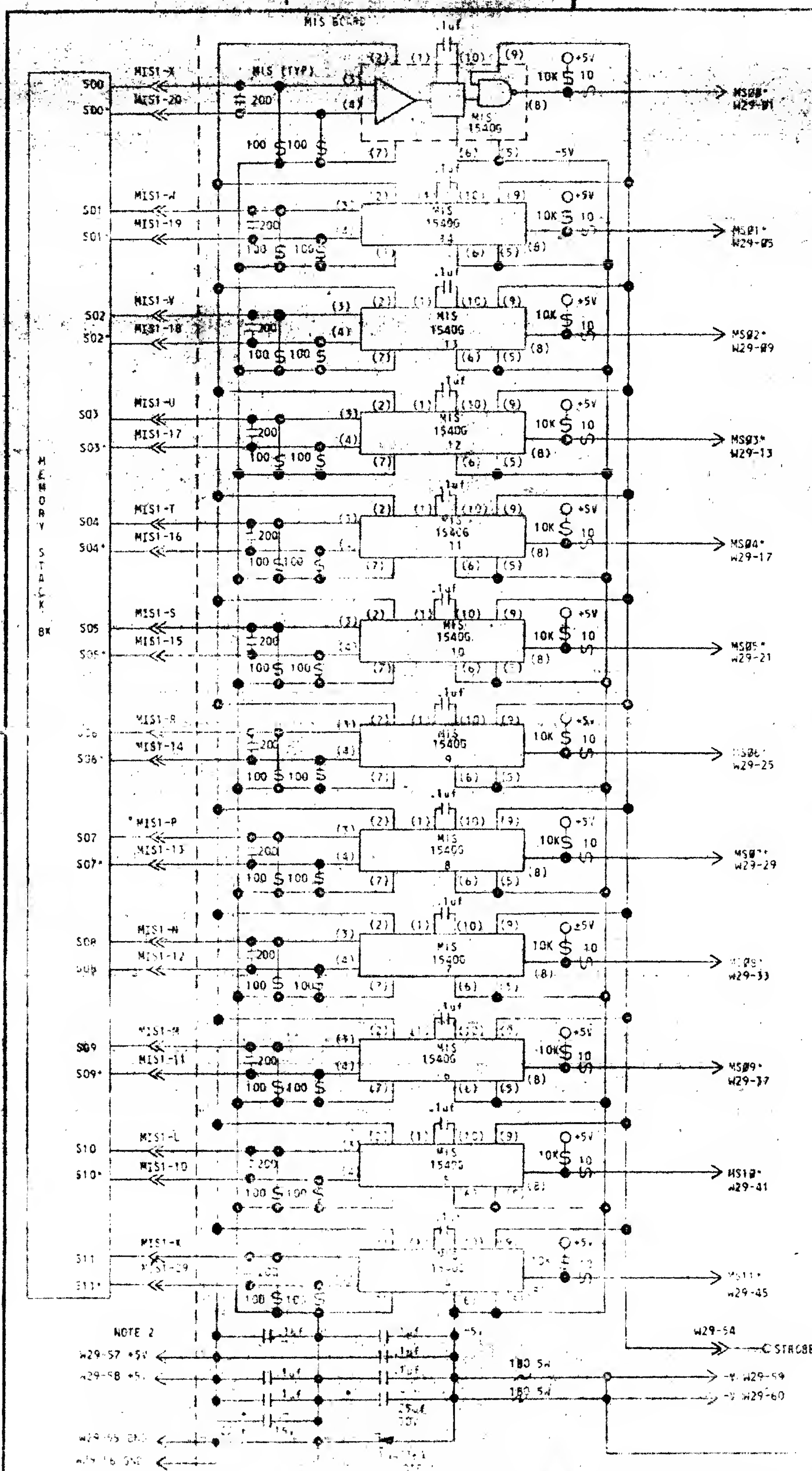
L84-0096-00 (SH 5)

Figure 7-3. ND812 4K Memory, Loading Diagram (Sheet 5 of 6)



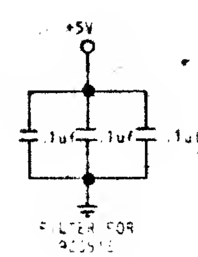
L84-0096-00 (SH 6)

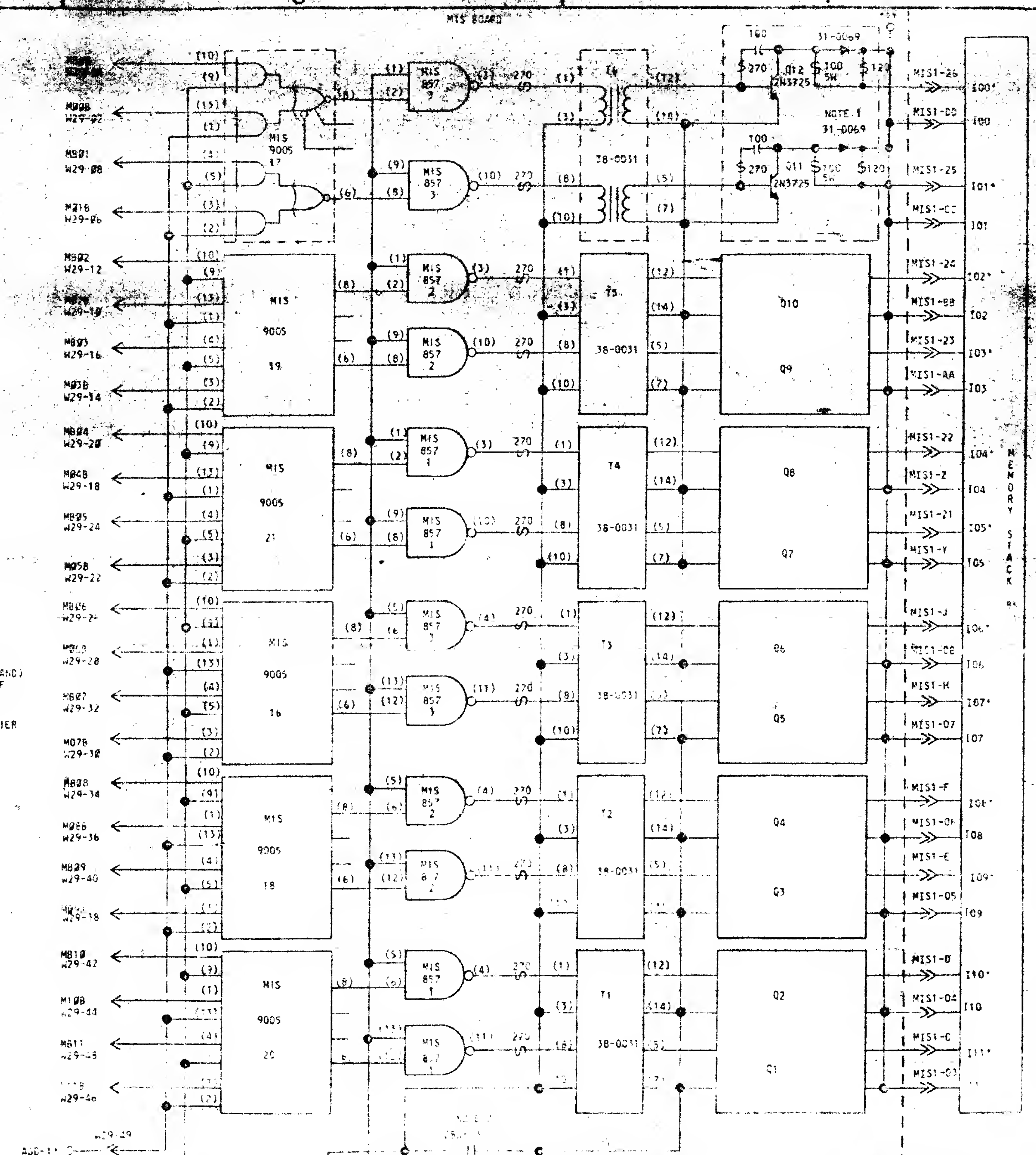
Figure 7-3. ND812 4K Memory, Loading Diagram (Sheet 6 of 6)



NOTES:

1. SOME UNITS USED WITH PLESSEY ENGLAND STACKS (MFR'D IN IRELAND) USE 91Ω 5W AND 270Ω INSTEAD OF 100Ω 5W AND 330Ω AND 1N4732A INSTEAD OF 1N4736A.
2. FILTERS VARY SOMEWHAT ON EARLIER MODELS.

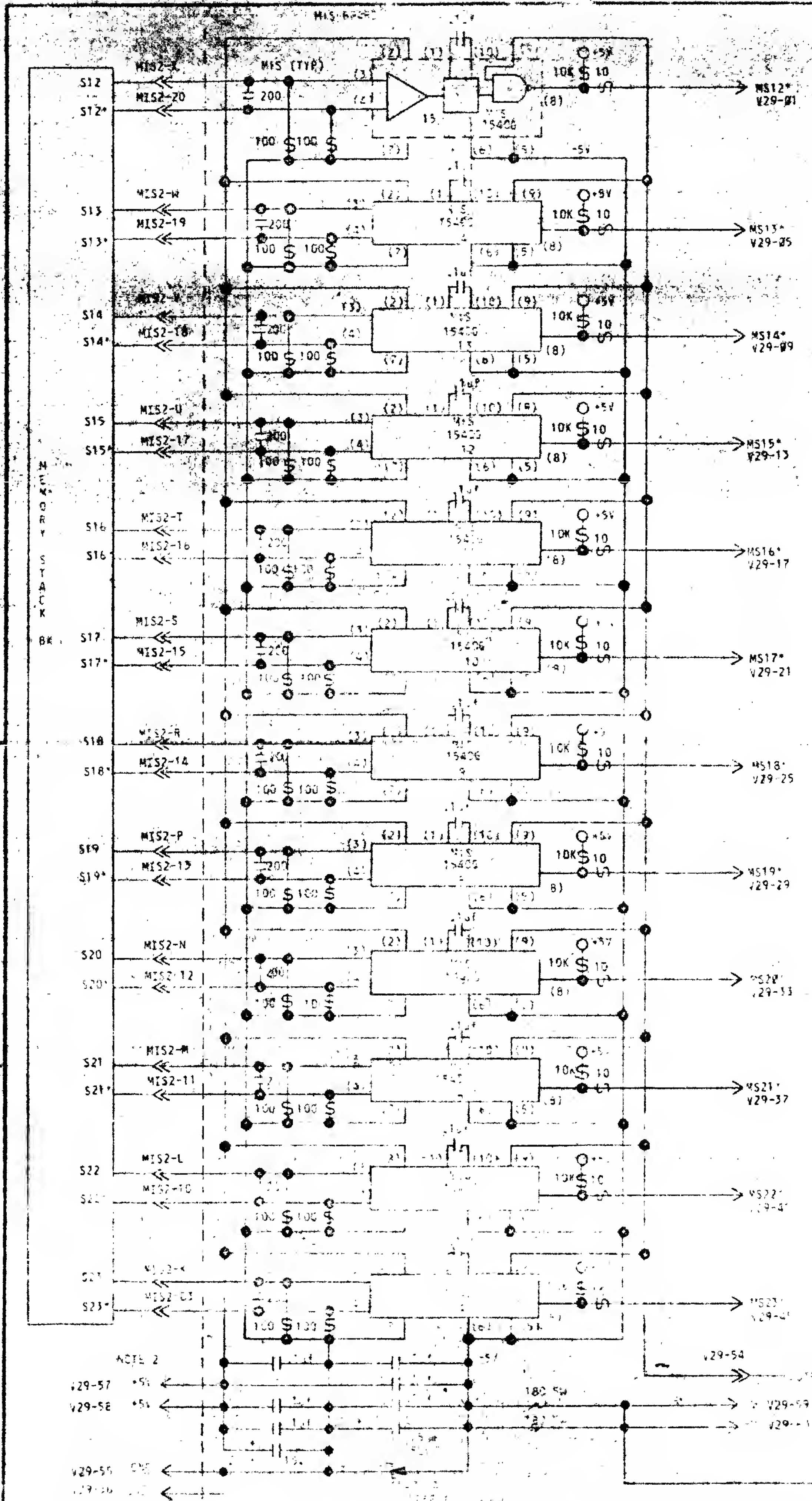




NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE, ILLINOIS 60067

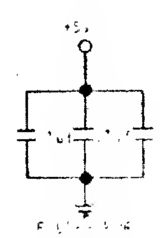
ND 812
8K MEMORY (MIS1)
SHEET 1 OF 10

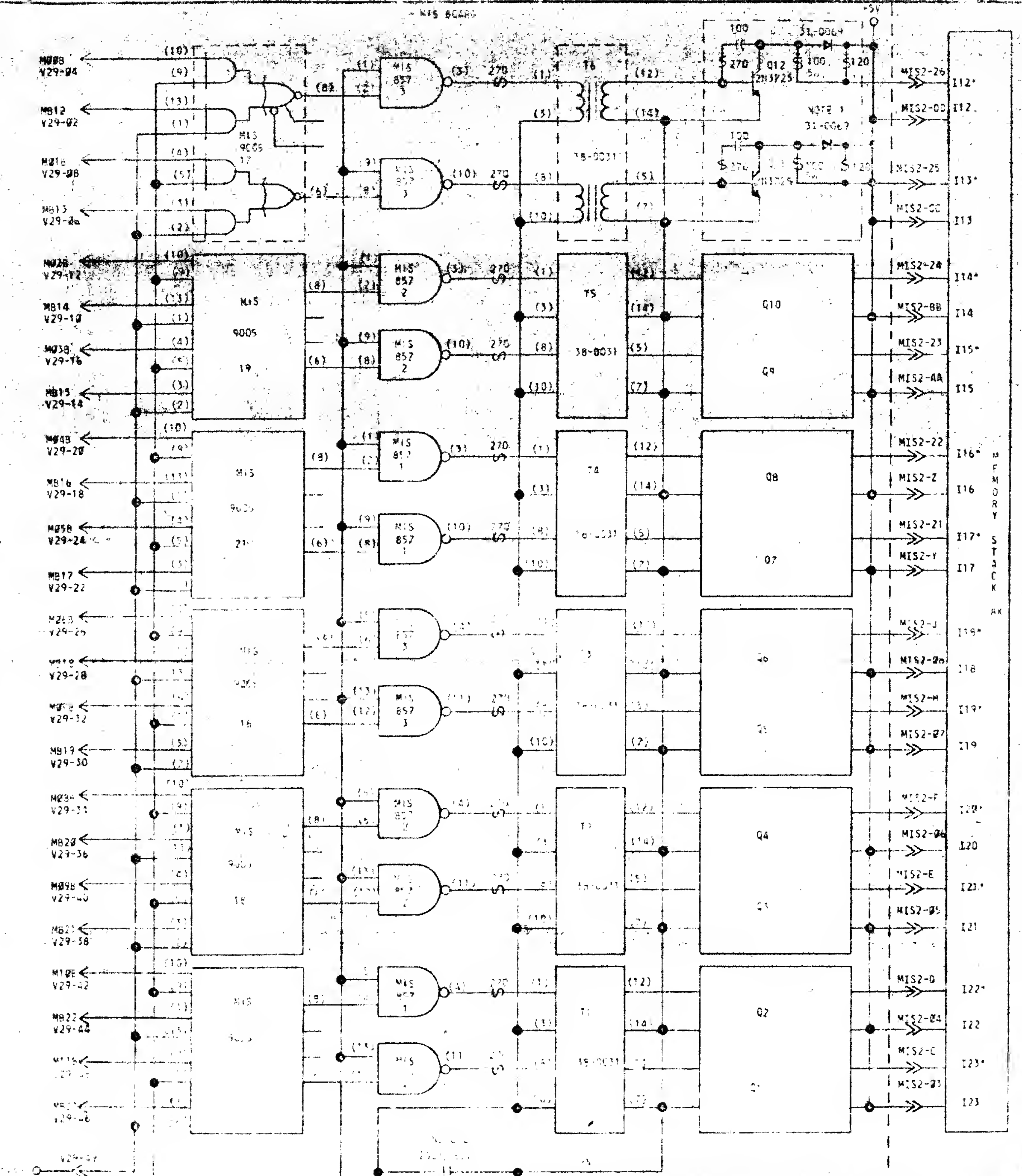
L84-0097-05



NOTES:

1. SOME UNITS [illegible] ENGLAND [illegible] IN [illegible] 910 [illegible] INSTEAD OF 1000 5W AND 330, [illegible] INSTEAD OF 1N4716A.
2. FILTERS VARY SOMEWHAT ON EARLIER MODELS.

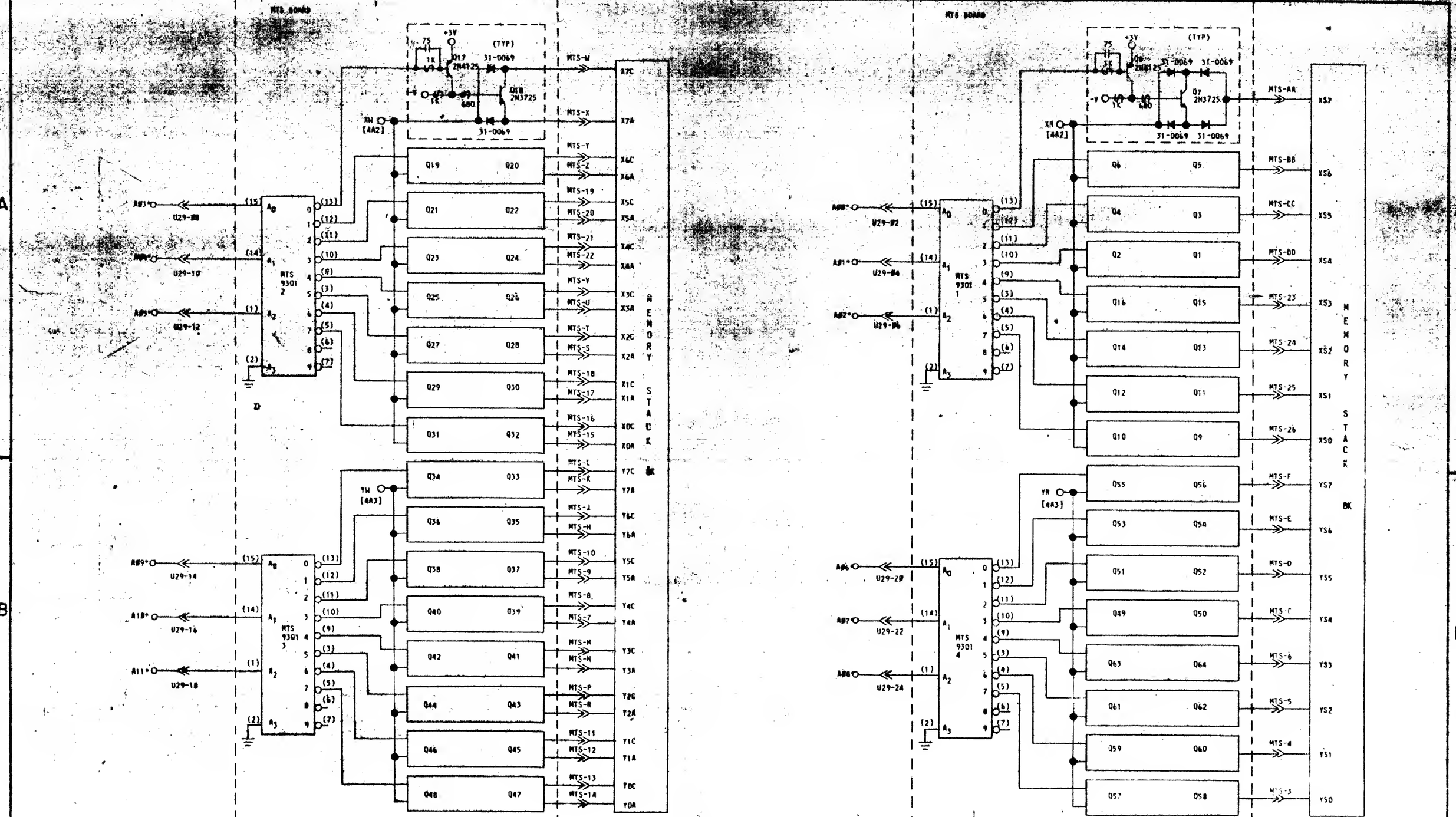




NUCLEAR DATA INC
POST OFFICE BOX 451, PALATINE, ILLINOIS 60067

ND 312
2K MEMORY (MIS2)
SHEET 2 OF 10

DRAWN BY:
DATE DRAWN:
CHECKED BY:
APPROVED BY:



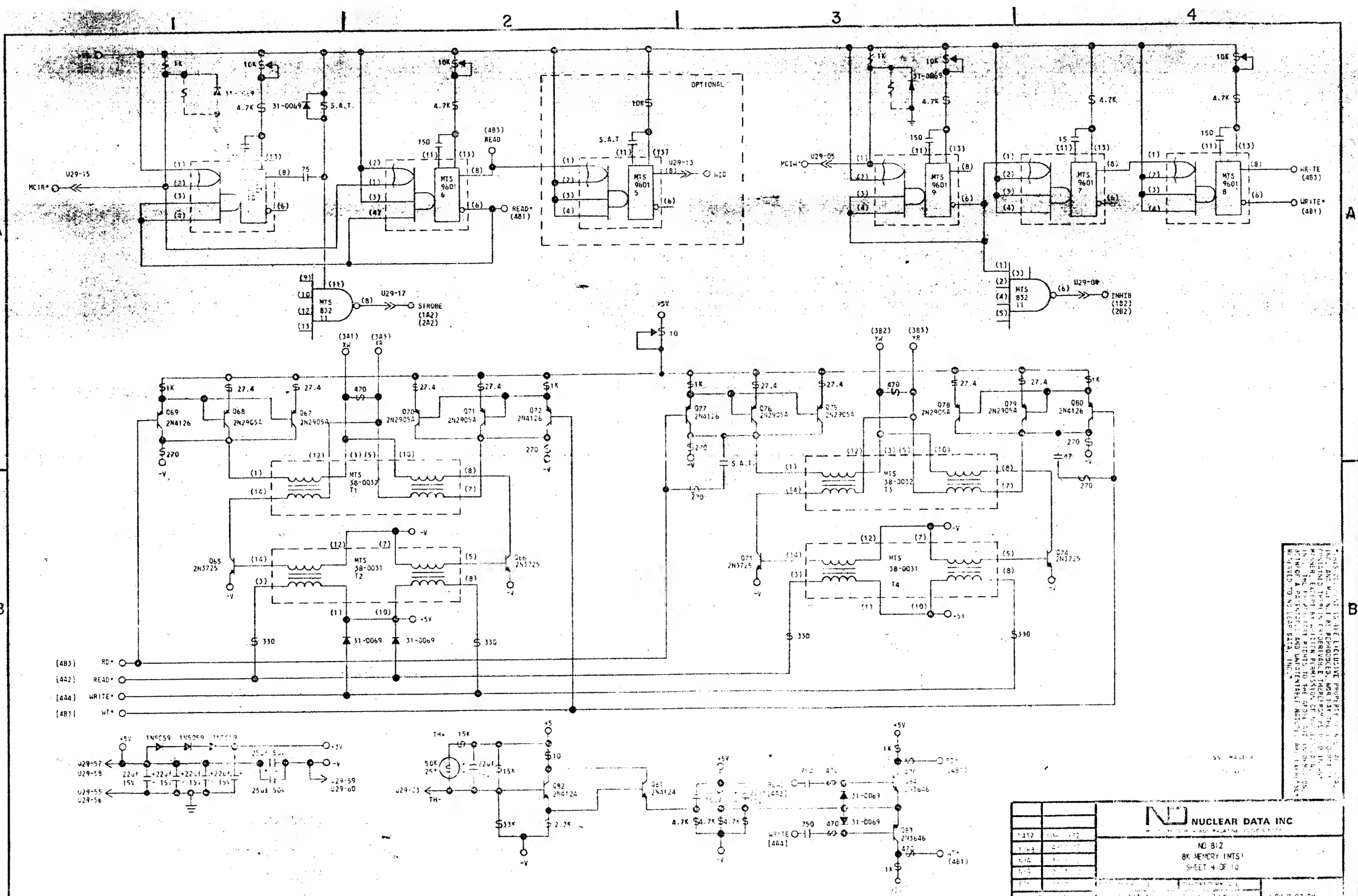
REVISIONS		
ECN	DATE	
1352	6-7-72	
1268	2-8-72	

NUCLEAR DATA INC
POST OFFICE BOX 451, PALATINE, ILLINOIS 60067

NO 812
8K MEMORY (MTS)
SHEET 3 OF 10

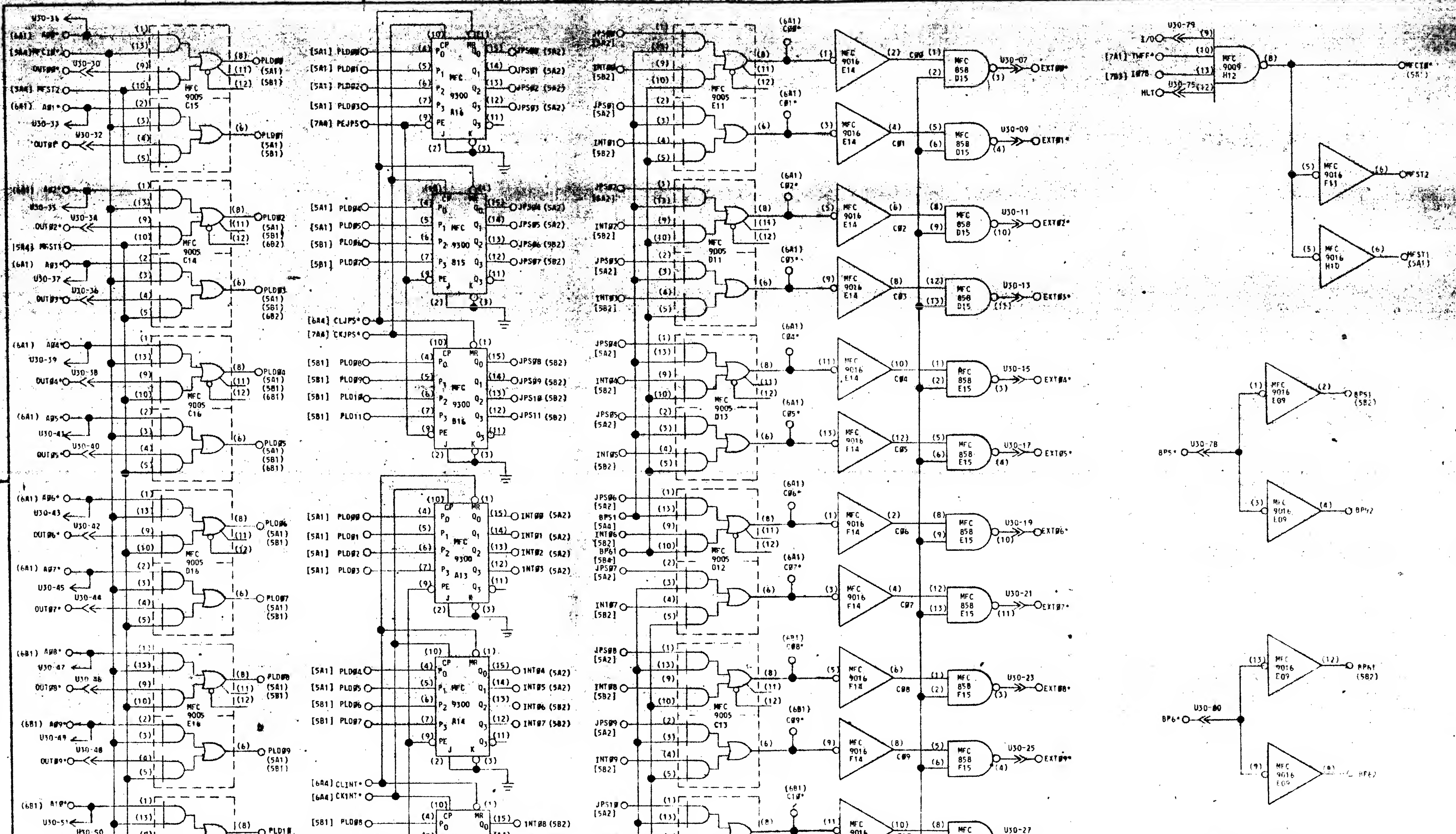
DRAWN BY: T. L. D. | CHECKED BY: R. C.
DATE DRAWN: 10/20/70 | APPROVED BY: J. G.

184-0097-02



NUCLEAR DATA INC

NO 812
8K MEMORY (MTS)
SHEET 4 OF 10

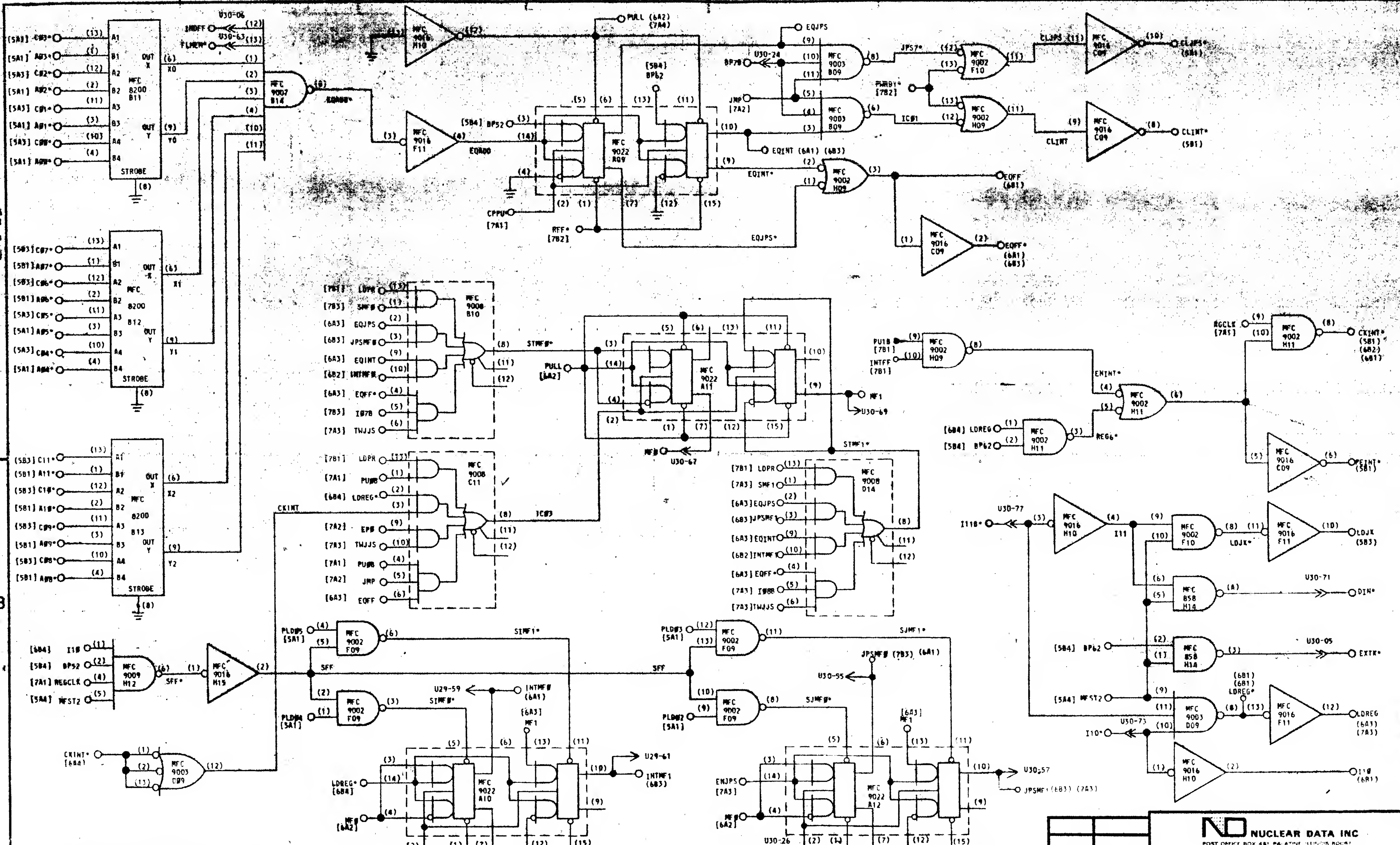


NUCLEAR DATA INC

ND 812
8K MEMORY (MFC)
SHEET 5 OF 1?

DRAWN BY: T.L.D. | CHECKED BY: F.L. | L84-0097-00
DATE DRAWN 10 21 70 | APPROVED BY J.G.

SS MASTER 07/24/72



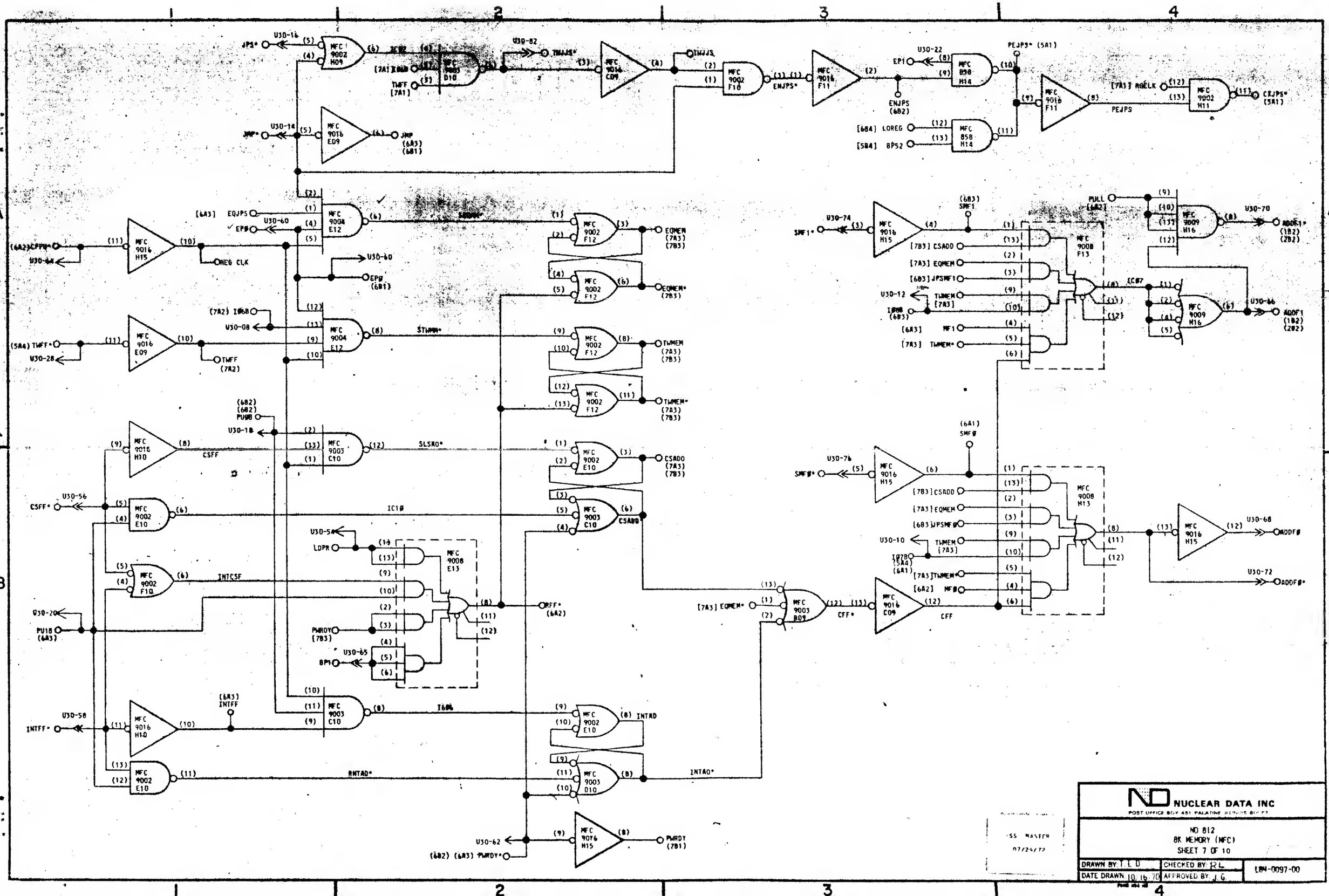
SS MASTER 07/24/72

1329	3-22-72
ECN	DATE
REVISIONS	

ND NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067

ND 812
8K MEMORY (MFC)
SHEET 6 OF 10

DRAWN BY: T.L.D.	CHECKED BY: R.L.	
DATE DRAWN: 10-20-70	APPROVED BY: J.G.	L84-0097-01


JPS*
U30-16
MFC 9002 H09
TWJPS*
U30-82
MFC 9016 C09
TWJPS
MFC 9002 F10
ENJPS*
MFC 9016 F11
EPI
U30-22
ENJPS (6B2)
MFC 858 H14
PEJPS* (5A1)
[7A1] RGELK
MFC 9002 H11
CEJPS* (5A1)
PEJPS
[684] LOREG
[584] BPS2
JMP*
U30-14
MFC 9016 E09
JMP (6A3) (6B1)
TWFF [7A1]
[6A3] EQJPS
EPB
U30-60
MFC 9008 E12
SEQMP*
EQMEM (7A3) (7B3)
EQMEM* (7B3)
EPB (6B1)
(6A2) CPPB*
U30-64
MFC 9016 H15
OREG CLK
(5A4) TWFF*
U30-28
MFC 9016 E09
TWFF (7A2)
(7A2) I06B
U30-08
MFC 9004 E12
STWMP*
TWMEM (7A3) (7B3)
TWMEM* (7A3) (7B3)
(682) (6B2) PU0B
U30-18
MFC 9016 H10
CSFF
MFC 9003 C10
SLSAD*
CSADD (7A3) (7B3)
CSFF*
U30-56
MFC 9002 E10
IC1B
CSADD
U30-54
LDPR
MFC 9008 E13
INTCSF
MFC 9002 F10
PWRDY (7B3)
U30-65
BP1
RFF* (6A2)
U30-20
PU1B (6A3)
INTFF*
U30-58
MFC 9016 H10
(6A3) INTFF
MFC 9003 C10
I06B
INTAD
MFC 9002 E10
RNTAD*
MFC 9003 D10
INTAD*
U30-62
MFC 9016 H15
PWRDY (7B1)
(6B2) (6A3) PWRDY*
SMF1*
U30-74
MFC 9016 H15
(6B3) SMF1
PULL (6B2)
MFC 9009 H16
U30-70
ADDF1* (1B2) (2B2)
[7B3] CSADD
[7A3] EQMEM
[6B3] JPSMF1
U30-12
TWMEM [7B3]
I08B (6B3)
[6A3] MF1
[7A3] TWMEM*
MFC 9008 F13
IC07
MFC 9009 H16
U30-66
ADDF1 (1B2) (2B2)
(6A1) SMF0
U30-76
SMF0*
MFC 9016 H15
[7B3] CSADD
[7A3] EQMEM
[6B3] JPSMF0
U30-10
TWMEM [7A3]
I07B (5A4) (6A1)
[7A3] TWMEM*
[6A2] MF0
MFC 9008 H13
U30-68
ADDF0
U30-72
ADDF0*
[7A3] EQMEM*
MFC 9003 B09
CFF*
MFC 9016 C09
CFF
NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067
ND 812
8K MEMORY (MFC)
SHEET 7 OF 10
DRAWN BY: T. L. D
CHECKED BY: R.L.
DATE DRAWN: 10.16.70
APPROVED BY: J.G.
LBM-0097-00
SS MASTER
07/24/72

1 2 3 4

A

MS CONNECTOR J9

PIN	SIGNAL	PIN	SIGNAL
1		2	A00* (3A3)
3	TH- (4B2)	4	A01* (3A3)
5	MCIH* (4A3)	6	A02* (3A3)
7		8	A03* (3A1)
9	INHIB (4A4)(2B2)	10	A04* (3A1)
11		12	A05* (3A1)
13	HID (4A1)	14	A09* (3B1)
15	MCIR* (4A1)	16	A10* (3B1)
17	STROBE(4A2)(1A2)(2A2)	18	A11* (3B1)
19		20	A06* (3B3)
21		22	A07* (3B3)
23		24	A08* (3B3)
25		26	
27		28	
29		30	
31		32	
33		34	
35		36	
37		38	
39		40	
41		42	
43		44	
45		46	
47		48	
49		50	
51		52	
53		54	
55	GND (4B1)	56	GND (4B1)
57	+5V (4B1)	58	+5V (4B1)
59	-V (4B1)	60	-V (4B1)

MS 2ND 4K W29

PIN	SIGNAL	PIN	SIGNAL
1	MS12* [2A2]	2	MB12 (2A3)
3		4	M00B (2A3)
5	MS13* [2A2]	6	MB13 (2A3)
7		8	M01B (2A3)
9	MS14* [2A2]	10	MB14 (2A3)
11		12	M02B (2A3)
13	MS15* [2A2]	14	MB15 (2A3)
15		16	M03B (2A3)
17	MS16* [2A2]	18	MB16 (2A3)
19		20	M04B (2A3)
21	MS17* [2A2]	22	MB17 (2A3)
23		24	M05B (2A3)
25	MS18* [2B2]	26	M06B (2A3)
27		28	MB18 (2A3)
29	MS19* [2B2]	30	MB19 (2A3)
31		32	M07B (2B3)
33	MS20* [2B2]	34	M08B (2B3)
35		36	MB20 (2B3)
37	MS21* [2B2]	38	MB21 (2B3)
39		40	M09B (2B3)
41	MS22* [2B2]	42	M10B (2B3)
43		44	MB22 (2B3)
45	MS23* [2B2]	46	MB23 (2B3)
47		48	M11B (2B3)
49	ADDF1* (2B2)(7A4)	50	
51	ADDF1 (2B2)(7B4)	52	
53	INHIB (2B2)(4A4)	54	STROBE(1A2)(2A2)[4B2]
55	GND (2B1)	56	GND (2B1)
57	+5V (2B1)	58	+5V (2B1)
59	-V (2B2)	60	-V (2B2)

1ST 4K W23

PIN	SIGNAL	PIN	SIGNAL
1	MS00* [1A2]	2	M00B [illegible]
3		4	MB00 [illegible]
5	MS01* [1A2]	6	M01B [illegible]
7		8	MB01 [illegible]
9	MS02* [1A2]	10	M02B [illegible]
11		12	MB02 [illegible]
13	MS03* [1A2]	14	M03B [illegible]
15		16	MB03 [illegible]
17	MS04* [1A2]	18	M04B [illegible]
19		20	MB04 [illegible]
21	MS05* [1A2]	22	M05B [illegible]
23		24	MB05 [illegible]
25	MS06* [1B2]	26	MB06 [illegible]
27		28	M06B [illegible]
29	MS07* [1B2]	30	M07B (1B3)
31		32	MB07 (1B3)
33	MS08* [1B2]	34	MB08 (1B3)
35		36	M08B (1B3)
37	MS09* [1B2]	38	M09B (1B3)
39		40	MB09 (1B3)
41	MS10* [1B2]	42	MB10 (1B3)
43		44	M10B (1B3)
45	MS11* [1B2]	46	M11B (1B3)
47		48	MB11 (1B3)
49	ADDF1* (1B2)	50	
51	ADDF1 (1B2)	52	
53	INHIBIT (1B2)	54	STROBE(1A2)(2A2)[4B2]
55	GND (1B1)	56	GND [illegible]
57	+5 (1B1)	58	+5 [illegible]
59	-V (1B2)	60	-V

MIO CONNECTOR J30

PIN	SIGNAL	PIN	SIGNAL
1	[illegible]	2	GND02
3	PSV03	4	PSV04
5	[illegible] [6B4]	6	INOFF (6A1)
7	[illegible] [5A3]	8	I06B (7A1)
9	[illegible] [5A3]	10	I07B (7B3)
11	[illegible] [5A3]	12	I08B (7A3)
13	[illegible] [5A3]	14	JMP* (7A1)
15	[illegible] [5A3]	16	JPS* (7A1)
17	[illegible] [5A3]	18	PU0B (7A1)
19	[illegible] [5B3]	20	PU1B (7B1)
21	[illegible] [5B3]	22	EP1 (7A3)
23	[illegible] [5B3]	24	BP7B (6A3)
25	[illegible] [5B3]	26	EP0* (6B3)
27	[illegible] [5B3]	28	TWFF* (7A1)
29	EXT11* [5B3]	30	OUT00* (5A1)
31	A00* (5A1)	32	OUT01* (5A1)
33	A01* (5A1)	34	OUT02* (5A1)
35	A02* (5A1)	36	OUT03* (5A1)
37	A03* (5A1)	38	OUT04* (5A1)
39	A04* (5A1)	40	OUT05* (5A1)
41	A05* (5A1)	42	OUT06* (5B1)
43	A06* (5B1)	44	OUT07* (5B1)
45	A07* (5B1)	46	OUT08* (5B1)
47	A08* (5B1)	48	OUT09* (5B1)
49	A09* (5B1)	50	OUT10* (5B1)
51	A10* (5B1)	52	OUT11* (5B1)
53	A11* (5B1)	54	LOPR (7B1)
55	[illegible] [6B3]	56	CSFF* (7B1)
57	[illegible] [6B3]	58	INTFF* (7B1)
59	[illegible] [6B2]	60	EP0 (7A2)
61	[illegible] [6B2]	62	PUP0* (7B2)
63	[illegible] (6A1)	64	CPPU* (7A1)
65	BPS (7B1)	66	ADDF1 [7A4]
67	[illegible] [6B2]	68	ADDF0 [7A4](2B2)
69	[illegible] [6A3]	70	ADDF1* [7A4](2B2)
71	[illegible] [6B4]	72	ADDF0* [7B4]
73	[illegible] (6B4)	74	SMF1* [7A3]
75	HLT (5A4)	76	SMF0* [7B3]
77	[illegible] (6B3)	78	BPS* (5A4)
79	[illegible] (5A4)	80	BP6* (5B4)
81		82	TWJJS* [7A2]
83	PSVB3	84	PSVB4
85	[illegible]	86	GND86

BPS2	[5B4] (5B2) (6A1) (6B1) (7A1)	MFST2	[5A4] (5A1) (6B1) (6B4)
BP62	[5B4] (5B2) (6A2) (6B3) (6B4)	MF0	[6A2] (6B2) (6B3) (7B3)
EQJPS	[6A3] (6A1) (6B3) (7A1)	MF1	[6A3] (6B2) (6B3) (7A3)
LOPR	[7B1] (6A1) (6B1) (6B3)	RGCLK	[7A1] (6A4) (6B1) (7A4)
		TWJJS	[7A3] (6A2) (6B2) (6B3)

B

MS CONNECTOR TO STACK

PIN	SIGNAL	PIN	SIGNAL
1		A	
2		B	
3	YS0 [3B4]	C	YS4 [3B4]
4	YS1 [3B4]	D	YS5 [3B4]
5	YS2 [3B4]	E	YS6 [3B4]
6	YS3 [3B4]	F	YS7 [3B4]
7	Y4A [3B2]	H	Y6A [3B2]
8	Y4C [3B2]	J	Y6C [3B2]
9	Y5A [3B2]	K	Y7A [3B2]
10	Y5C [3B2]	L	Y7C [3B2]
11	Y1C [3B2]	M	Y3C [3B2]
12	Y1A [3B2]	N	Y3A [3B2]
13	Y0C [3B2]	P	Y2C [3B2]
14	Y0A [3B2]	R	Y2A [3B2]
15	X0A [3A2]	S	X2A [3A2]
16	X0C [3A2]	T	X2C [3A2]
17	X1A [3A2]	U	X3A [3A2]
18	X1C [3A2]	V	X3C [3A2]
19	X5C [3A2]	W	X7C [3A2]
20	X5A [3A2]	X	X7A [3A2]
21	X4C [3A2]	Y	X6C [3A2]
22	X4A [3A2]	Z	X6A [3A2]
23	XS3 [3A4]	AA	XS7 [3A4]
24	XS2 [3A4]	BB	XS6 [3A4]
25	XS1 [3A4]	CC	XS5 [3A4]
26	XS0 [3A4]	DD	XS4 [3A4]
27		EE	
28		FF	

W32 CONNECTOR TO STACK

PIN	SIGNAL	PIN	SIGNAL
1		A	
2		B	
3	I23 [2B4]	C	I23* [2B4]
4	I22 [2B4]	D	I22* [2B4]
5	I21 [2B4]	E	I21* [2B4]
6	I20 [2B4]	F	I20* [2B4]
7	I19 [2B4]	H	I19* [2B4]
8	I18 [2A4]	J	I18* [2A4]
9	S23* [2B1]	K	S23 [2B1]
10	S22* [2B1]	L	S22 [2B1]
11	S21* [2B1]	M	S21 [2B1]
12	S20* [2B1]	N	S20 [2B1]
13	S19* [2B1]	P	S19 [2B1]
14	S18* [2B1]	R	S18 [2B1]
15	S17* [2A1]	S	S17 [2A1]
16	S16* [2A1]	T	S16 [2A1]
17	S15* [2A1]	U	S15 [2A1]
18	S14* [2A1]	V	S14 [2A1]
19	S13* [2A1]	W	S13 [2A1]
20	S12* [2A1]	X	S12 [2A1]
21	I17* [2A4]	Y	I17 [2A4]
22	I16* [2A4]	Z	I16 [2A4]
23	I15* [2A4]	AA	I15 [2A4]
24	I14* [2A4]	BB	I14 [2A4]
25	I13* [2A4]	CC	I13 [2A4]
26	I12* [2A4]	DD	I12 [2A4]
27		EE	
28		FF	

MS CONNECTOR TO STACK

PIN	SIGNAL	PIN	SIGNAL
1		A	
2		B	
3	I11 [1B4]	C	I11* [1B4]
4	I10 [1B4]	D	I10* [1B4]
5	I09 [1B4]	E	I09* [1B4]
6	I08 [1B4]	F	I08* [1B4]
7	I07 [1B4]	H	I07* [1B4]
8	I06 [1A4]	J	I06* [1A4]
9	S11* [1B1]	K	S11 [1B1]
10	S10* [1B1]	L	S10 [1B1]
11	S09* [1B1]	M	S09 [1B1]
12	S08* [1B1]	N	S08 [1B1]
13	S07* [1B1]	P	S07 [1B1]
14	S06* [1B1]	R	S06 [illegible]
15	S05* [1A1]	S	S05 [illegible]
16	S04* [1A1]	T	S04 [1A1]
17	S03* [1A1]	U	S03 [1A1]
18	S02* [1A1]	V	S02 [1A1]
19	S01* [1A1]	W	S01 [1A1]
20	S00* [1A1]	X	S00 [1A1]
21	I05* [1A4]	Y	I05 [1A4]
22	I04* [1A4]	Z	I04 [1A4]
23	I03* [1A4]	AA	I03 [1A4]
24	I02* [1A4]	BB	I02 [illegible]
25	I01* [1A4]	CC	I01 [illegible]
26	I00* [1A4]	DD	I00 [illegible]
27		EE	
28		FF	

NOTES:

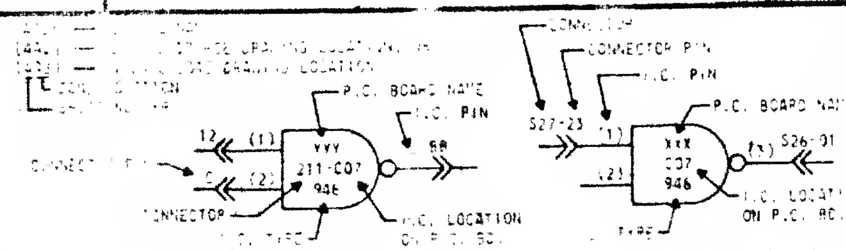
1 - ALL DIODES ARE G964 OR EQUIVALENT, EXCEPT AS NOTED.
2 - ALL RESISTORS ARE 1/4W, ±5%, EXCEPT AS NOTED.
3 - ALL CAPACITORS ARE pf, EXCEPT AS NOTED.
4 - I.C. VOLTAGES, EXCEPT AS NOTED:
14 PIN DIP, PIN (7) GND PIN (14) +5V
16 PIN DIP, PIN (8) GND PIN (16) +5V
24 PIN DIP, PIN (12) GND PIN (24) +5V

5 - THE FOLLOWING SYMBOLS/NOTATIONS ARE USED ON THE DIAGRAM AND/OR PRINTED CIRCUIT BOARD WIDE BUS

IC - INTEGRATED CIRCUIT
Q - TRANSISTOR
( ) - IC PIN DESIGNATION
- CONNECTOR DESIGNATION
NC - NO CONNECTION

SAT - SELECT AT TEST
(P1) - PRECISION RESISTORS 100PPM 1/8W, ±1% METAL FILM
- DC COMMON
FB - FERRITE BEAD

- GERMANIUM DIODE
- SILICON DIODE
- ZENER DIODE
- TUNNEL DIODE
- SELENIUM DIODE



REVISIONS

1268	4-1[illegible]

RESERVED TO ND.

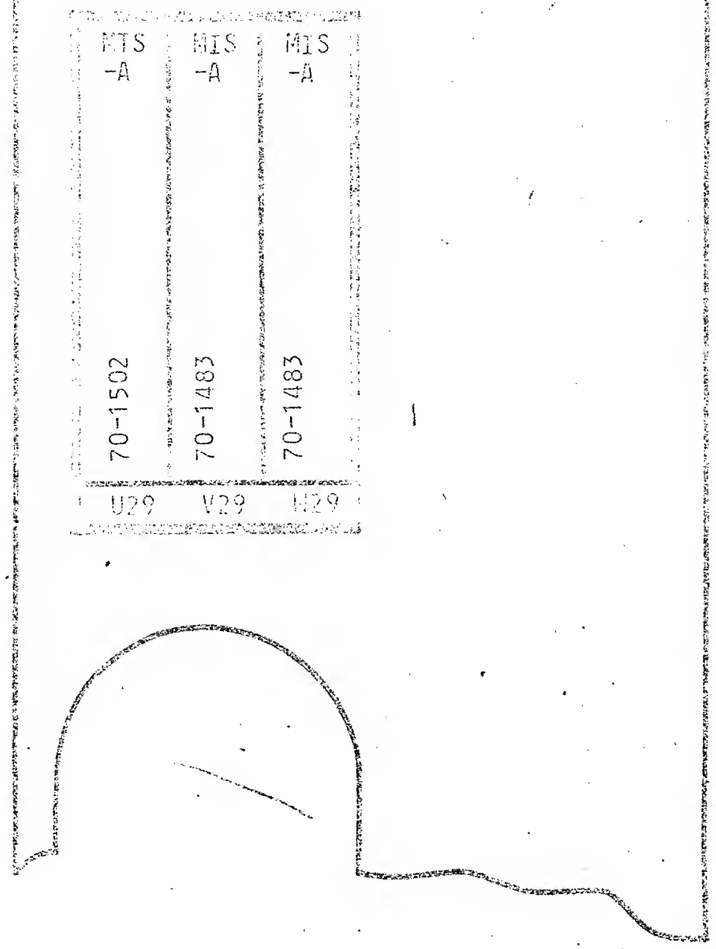
NUCLEAR DATA INC
POST OFFICE BOX 451 PALATINE ILLINOIS 60067

ND-812
8K MEMORY CONNECTORS

DRAWN BY T.L.D. | CHECKED BY TKC | SHEET 8 OF [illegible]
DATE 10 20 70

4

FRONT VIEW



L84-0097-00 (SH 9)

Figure 7-4. ND812 8K Memory, Loading Diagram (Sheet 9 of 10)

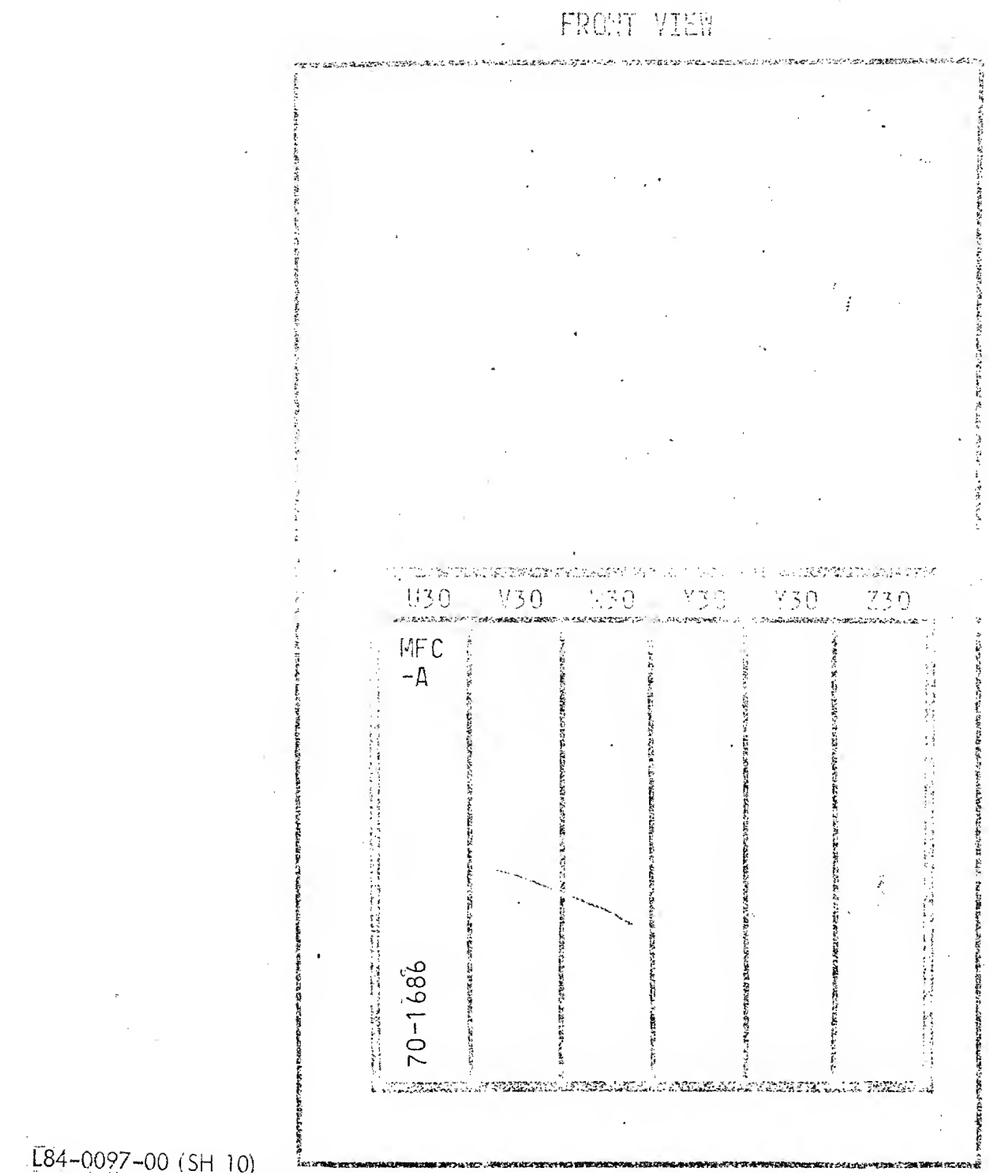


Figure 7-4. ND812 8K Memory, Loading Diagram (Sheet 10 of 10)